

2.0 METHODS OF ANALYSIS

2.1 Visual Survey

The initial step in identifying friable asbestos-containing materials involves a thorough walk-through visual inspection. Asbestos inspections are conducted in accordance with Chapter I of title 40 of the Code of Federal Regulations, Part 763. Friable materials, those materials that are easily crumbled and most likely to contribute to air particulate concentrations, were the main focus of the inspections. Materials that are traditionally non-friable, such as pipe and equipment insulation, are also documented when observed.

2.2 Sampling Procedures

Following the visual survey, samples of the friable material were obtained using EPA protocol. To determine the sampling requirements, the investigator first located the different sampling areas by evaluating the texture, color, thickness and consistency of the material. From each sampling area, a statistically valid number of randomly located samples were obtained.

Air monitoring was performed in areas where friable materials were located, and/or where bulk sampling was performed to document the presence of asbestos.

2.3 Analytical Procedures

The bulk samples obtained were analyzed utilizing polarized light microscopy with dispersion staining, and when necessary, x-ray diffraction to determine the presence of asbestos fibers. Once

the presence of asbestos is verified. the specific type of asbestos is ascertained. Finally, the asbestos content for each sample, as a percentage, is determined. The laboratory analyzing the samples was EnviroSciences, Inc., 3509 Haworth Drive, Raleigh, North Carolina. The laboratory is managed by Reginald C. Jordan who is an A.B.I.H. Certified Industrial Hygienist. The complete laboratory report is maintained in BCM files, and is available for review when requested.

The air sampling was performed utilizing NIOSH method 7400 to determine the concentration of airborne fibers within the atmosphere. Method 7400 determines fiber concentration of particulates five microns in length with a length to width ratio of five to one. The method is not specific to asbestos fibers alone, but determines the concentration of all fibers which are similar to the asbestos fiber.

3.0 RESULTS

BCM representative, Mark A. Johnson, performed the visual survey, bulk sampling, and the air quality monitoring on April 18, 19, and 20, 1986.

The results of the visual inspection and the analysis of the bulk and air samples obtained are as follows:

Building 2200

VISUAL OBSERVATION

Friable fireproofing was observed on structural steel throughout the building (Floors 1 through 10 and basement). A transite cooling tower was observed on the roof. Pipe lagging and pipe elbows, possibly containing asbestos, were observed in the mechanical rooms on all floors.

BULK SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u>
01	4th Floor Ceiling Tile	0%
02	4th Floor - Fireproofing	20%
03	7th Floor Mech Room Pipe Elbow Tape	10%
04	7th Floor - Fireproofing	20%
05	Basement - Elbows on Chillers	50%
06	10th Floor - Fireproofing	6%
07	10th Floor - Fireproofing	5%
08	10th Floor - Fireproofing	7%
09	10th Floor - Elbows in Mech Room - on Hot Water Heater	10%

BUILDING 2200

(continued)

BULK SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u>
10	9th Floor - Ceiling Tile	0%
11	9th Floor - Fireproofing	8%
12	9th Floor - Fireproofing	8%
13	9th Floor - Fireproofing	7%
14	8th Floor - Fireproofing	9%
15	8th Floor - Fireproofing	7%
16	8th Floor - Fireproofing	7%
17	7th Floor - Fireproofing	6%
18	7th Floor - Fireproofing	8%
19	7th Floor - Fireproofing	10%
20	7th Floor Mech Room Pipe Elbows - Tape	40%
21	6th Floor - Fireproofing	6%
22	6th Floor - Fireproofing	9%
23	6th Floor - Fireproofing	7%
24	5th Floor - Fireproofing	8%
25	5th Floor - Fireproofing	15%
26	5th Floor - Fireproofing	8%
27	5th Mech Room Pipe Elbow - Tape	50%
28	4th Floor - Floor Tile	0%
29	4th Floor - Fireproofing	10%
30	4th Floor - Fireproofing	7%
31	3rd Floor - Fireproofing	6%
32	3rd Floor - Fireproofing	6%
33	3rd Floor - Fireproofing	8%
34	2nd Floor - Fireproofing	10%
35	2nd Floor - Fireproofing	8%

BUILDING 2200

(continued)

BULK SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u>
36	2nd Floor - Fireproofing	8%
37	1st Floor - Fireproofing	7%
38	1st Floor - Fireproofing	8%
39	1st Floor - Fireproofing	8%
40	Basement - Fireproofing	6%
41	Basement - Fireproofing	6%
42	Basement - Fireproofing	9%
43	Basement - Elbows in Chiller Rm - Water Supply Line	10%
44	Basement - Elbows in Heater Tank Rm	2%

AIR SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u> (fibers/cc)
01	4th floor Exposed Area	0.071
02	4th Floor Vacuum Sample	*
03	4th Floor Vacuum Sample	*
04	4th Floor Wipe Sample	Too
05	4th Floor Wipe Sample	dirty
06	4th Floor Wipe Sample	to read

* Both vacuum samples indicated a significant quantity of fibers resembling the configuration of asbestos fibers.

BUILDING 2200

(continued)

AIR SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u> (fibers/cc)
07	4th Floor Exposed Area	0.009
08	9th Floor Background	0.020
09	8th Floor Background	0.016
10	7th Floor Background	0.028
11	6th Floor Background	0.008
12	10th Floor Background	0.011
13	5th Floor Background	0.007
14	3rd Floor Background	0.006
15	2nd Floor Background	0.009
16	1st Floor Background	0.007
17	Basement Background	0.006

LOCATION OF ASBESTOS MATERIAL

Asbestos materials were confirmed within the following areas of Building 2200:

<u>AREA</u>	<u>TYPE</u>	<u>LOCATION</u>
Basement, Floors 1-10	Fireproofing	Throughout Floor
Mechanical Rooms	Pipe Elbows	Piping
Roof Level	Transite Panels	Cooling Tower

Building 2600VISUAL OBSERVATION

Friable fireproofing was observed on structural steel throughout the building (Floors 1 through 4) and basement. Other materials observed include a transite cooling tower at ground level and insulated pipe elbows in the chiller building area.

BULK SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u>
01	Basement Fireproofing	25%
02	Basement Fireproofing	7%
03	Basement Fireproofing	9%
04	Basement Ceiling Tile	0%
05	1st Floor - Fireproofing	8%
06	1st Floor - Fireproofing	8%
07	1st Floor - Fireproofing	6%
08	1st Floor - Ceiling Tile	0%
09	2nd Floor - Fireproofing	7%
10	2nd Floor - Fireproofing	9%
11	2nd Floor - Fireproofing	9%
12	3rd Floor - Fireproofing	8%
13	3rd Floor - Fireproofing	9%
14	3rd Floor - Fireproofing	6%
15	Chiller Building - Elbows	0%
16	4th Floor - Fireproofing	5%
17	4th Floor - Fireproofing	6%
18	4th Floor - Fireproofing	6%

BUILDING 2600
(continued)

AIR SAMPLING RESULTS

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u> (fibers/cc)
18	4th Floor Background	0.006
19	3rd Floor Background	0.006
20	Basement Background	0.006
21	1st Floor Background	0.007
22	2nd Floor Background	0.006

LOCATION OF ASBESTOS MATERIAL

<u>AREA</u>	<u>TYPE</u>	<u>LOCATION</u>
Basement, Floors 1 - 4	Fireproofing	Throughout Floors
Chiller Mech Room	Pipe Elbows	Piping
Ground Level	Transite	Cooling Tower

Halliwell Backup for Century Center Complex

<u>Date</u>	<u>Description</u>
	<u>2200 Century Center Drawings</u>
	Drawings of Century Center I ground floor through the 10 th floor
	<u>2600 Century Center Drawings</u>
	Drawings of Century Center II
	<u>4/86 BCM Survey</u>
4/28/86	Asbestos Survey Report for Prudential Insurance Company, Century Center Complex prepared by BCM Converse
	<u>Century Center Inspection 2</u>
	Jack Halliwell Photo Log
	<u>2200 Century Center Ground Floor Cost File (before sale) – Suite 30</u>
8/21/87	Central Jersey Coatings Invoice in the amount of \$6,564 for asbestos removal and replacement of the 2200 Building ground floor Suite 30, 9 th floor partial suite
	<u>10th Fl. Project File (2200)</u>
2/88	Project specifications, general terms and conditions 2200 Century Center prepared by ATEC Environmental Services
3/15/88	Letter from ATEC Associates to Property Management Systems re: 10 th floor and penthouse asbestos abatement, 2200 Building, Century Center
3/21/88	Century Center 2200 Building Mandatory Pre-Bid Meeting Minutes
4/20-5/25/88	Century Center Progress Meeting Minutes
5/19/88	Letter from ATEC Associates to Asbestos Abatement Technology re: Century Center Certification of Substantial Completion
5/27/88	Letter from Geo Environmental Services to Asbestos Abatement Technology re: air monitoring and air sample analysis, 2200 Century Tower, 10 th floor

<u>Date</u>	<u>Description</u>
4/16-5/14/88	ATEC Associates Project Inspection Reports for 2200 Century Center <u>Century Center O&M, 2200 and 2600</u>
4/29/88	ATEC Associates Invoice No. 3204609 in the amount of \$3,510
11/30/87	BCM Converse Invoice No. 11-1486 in the amount of \$840.28
11/30/87	BCM Converse Invoice No. 11-1410 in the amount of \$900.75
3/31/88	BCM Converse Invoice No. 3-463 in the amount of \$593.76
3/31/88	BCM Converse Invoice No. 3-465 in the amount of \$2,092.05
4/29/88	BCM Converse Invoice No. 4-501 in the amount of \$1,148.71
3/29/88	BCM Converse letter to Prudential enclosing Invoice 4-501
12/1/87	BCM Converse letter to Property Management Systems re: Century Center – Construction Surveillance and Industrial Hygiene Services from 11/7- 11/8/87 for the asbestos abatement at Century Center
8/13/87	Letter from BCM Converse to Prudential re: Air Monitoring and O&M
11/10/87	Letter from BCM Converse to Property Management Systems re: O&M Training Respirator Fit Tests
1/29/88	BCM Converse Invoice No. 1-155 in the amount of \$2,362.50
1/27/88	BCM Converse letter to Prudential re: Century Center enclosing copies of BCM invoices
12/4/87	BCM Converse letter to Prudential re: Century Center enclosing invoices
11/2/89	Westinghouse Environmental & Geotechnical Services Invoice G17982 in the amount of \$588.87
1/4/88	Letter from ATEC Associates to Property Management Systems re: proposal to provide industrial hygiene services, 2200 and 2600 Buildings, Century Center
1/27/88	Letter from Property Management Systems to Prudential recommending acceptance of ATEC Associates proposal

<u>Date</u>	<u>Description</u>
<u>2200 Century Center 10th Floor Civil Suit</u>	
1/23/91	Memorandum re: Asbestos-Containing Materials, 2200 Century Parkway Building, 10 th floor
1/9/92	Memorandum re: 2200 Century Parkway Building, 10 th floor ACM Cleanup
1/30/91	Memorandum re: 2200 Century Parkway, 10 th floor Asbestos Cleanup
<u>2200 Century Center Sales Agreement</u>	
1/20/88	Letter from Property Management Systems to Prudential re: Asbestos Abatement, 2200 and 2600 Buildings, Century Center, Atlanta, Georgia enclosing preliminary numbers Property Strategy, Century Center I
7/11/88	Memo re: proposed sale structure for Century Center
7/28/88	Agreement for Purchase and Sale (general account) by and between Prudential and Century Center Group
8/16/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation 2200 Century Center Building – ground floor Asbestos abatement 2200 Building, Century Center
10/10/90	White & Associates Real Estate letter to Prudential re: Removal Fund Allocation – final request 2200 Century Parkway Building, Atlanta, Georgia
<u>2200 Century Center Ground Floor Cost File (before sale) Mechanical Room</u>	
11/12/87	Central Jersey Coatings Invoice in the amount of \$4,862 for asbestos removal and replacement at 2200 Century Boulevard mechanical chiller room
2/12/88	BCM Converse letter to Prudential re: Century Center enclosing Invoice No. 1-154 in the amount of \$954.26
4/29/88	BCM Converse letter to Prudential re: HVAC Emergency Services enclosing Invoice No. 4-501 in the amount of \$1,148.71

<u>Date</u>	<u>Description</u>
11/18/87	Letter from Asbestos Abatement Services to Property Management Systems enclosing results of analysis for air samples collected during the asbestos abatement project at 2200 Century Boulevard
	<u>Century Center Inspection 1</u>
	Photographs and Jack Halliwell Photo Log
	<u>2200 Century Center Suite 750 (before sale) Cost File</u>
2/25/88	Central Jersey Coatings Invoice No. 8802-011 in the amount of \$22,263 for asbestos work done on Suite 750
3/18/88	Swofford & Co. Invoice No. 0549 in the amount of \$4,762.70 for drywall due to abatement
1/5/88	Letter from Central Jersey Coatings to PMS White Associates re: asbestos abatement and re-fireproofing Suite 750, 2200 Building
1/29/88	Prudential proposal to Property Management Systems for asbestos removal
	<u>Century Center (2200) 10th Floor (before sale) Cost File</u>
4/28/88	Letter from ATEC Associates to Property Management Systems re: AAT Payment Request No. 1 for 2200 Century Center asbestos abatement in the amount of \$46,564.20
5/19/88	Letter from ATEC Associates to Property Management Systems re: AAT Payment Request No. 2 for 2200 Century Center asbestos abatement – request for \$41,523.30
1/29/88	ATEC Associates Invoice No. 3203841 in the amount of \$1,830.90
2/29/88	ATEC Associates Invoice No. 3204073 in the amount of \$6,631.25
4/29/88	ATEC Associates Invoice No. 3204599 in the amount of \$5,661.63
5/31/88	ATEC Associates Invoice No. 3201866 in the amount of \$10,713.05
6/30/88	ATEC Associates Invoice No. 3205100 in the amount of \$1,318
6/28/88	Swofford & Co. Invoice No. 0606 in the amount of \$2,375

<u>Date</u>	<u>Description</u>
3/22/88	Property Management Systems 1 order for approval of \$7,546.65 to ATEC Associates Air Monitoring
4/5/88	Prudential Proposal for Asbestos Abatement Technology with the Brand Companies and DPC General Contractors
4/13/88	Agreement between Asbestos Abatement Technology, Inc. and Property Management Systems, agent for Prudential 2200 Century Center Bid Matrix
3/15/88	ATEC Associates letter to Property Management Systems re: 10 th floor and penthouse asbestos abatement
3/30/88	ATEC Environmental Services letter to Property Management Systems re: bid review and award recommendation to Century Center 10 th floor
2/3/88	Letter from General Contractors, Inc. to ATEC Associates re: 2200 Century Center 10 th floor proposal for removal of asbestos-containing fireproofing
2/29/88	Letter from ATEC Associates to Property Management Systems re: 10 th floor asbestos abatement, 2200 Building, Century Center
5/16/88	Letter from Asbestos Abatement Technology, Inc. to ATEC Environmental Services re: 10 th floor, 2200 Century Center asbestos abatement
5/19/88	Letter from ATEC Associates to Asbestos Abatement Technology re: Century Center certification of substantial completion
	<u>2600 Century Center, Suite 405 (before sale) Cost File</u>
9/23/87	Central Jersey Coatings Invoice in the amount of \$5,618 for asbestos removal, 2600 Building, Suite 450
	<u>2600 Century Center Sales Agreement</u>
7/28/88	Agreement for Purchase and Sale by and between Prudential and Century Center I
	<u>Fund Disbursement Requests, Century Center (2200 and 2600)</u>
	Century Center Asbestos Abatement Program Financial Summary Report

<u>Date</u>	<u>Description</u>
5/4/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 and 2600 Century Parkway Buildings, Atlanta, Georgia – request for disbursement of \$344,061.80
3/23/89	Prudential letter re: Century Center Asbestos Abatement Program – approval of contractors
4/27/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2600 Century Parkway – 4 th floor, Atlanta, Georgia – request for disbursement of \$585,636.22
8/16/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Center Building – ground floor, Atlanta, Georgia – request for disbursement of \$321,045.90
6/13/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2600 Century Center Building – basement and 1 st floor, Atlanta, Georgia – request for disbursement of \$629,951.34
5/25/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2600 Century Parkway – 2 nd through 4 th floor stairwells, Atlanta, Georgia – request for disbursement of \$30,000
5/23/90	Prudential letter to White & Associates re: 2600 Century Parkway, 4 th floor enclosing check in the amount of \$365,636.22
11/28/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Center Building – ground floor electrical room, Atlanta, Georgia – request for disbursement of \$23,016
3/22/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Parkway – 1 st floor, Atlanta, Georgia – request for disbursement of \$331,561.80
1/30/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Parkway – 2 nd and 7 th floors, Atlanta, Georgia – request for disbursement of \$580,645.60
6/28/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Parkway – 3 rd floor, Atlanta, Georgia – request for disbursement of \$331,561.80

<u>Date</u>	<u>Description</u>
7/12/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Parkway – 4 th floor, Atlanta, Georgia – request for disbursement of \$331,561.80
10/25/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Center Building – 5th floor, Century Center Office Park, Atlanta, Georgia – request for disbursement of \$319,061.80
12/18/89	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation, 2200 Century Parkway – 6 th floor, Atlanta, Georgia – request for disbursement of \$319,061.80
2/13/89	Letter from White & Associates Real Estate to Prudential re: Disbursement Request from Removal Fund – 8 th floor, 2200 Century Parkway, Atlanta, Georgia requesting disbursement of \$377,038
5/15/89	Prudential letter to White & Associates enclosing first payment in the amount of \$344,061.80 for the Asbestos Removal Fund
5/15/89	Memo re: revision of payment amount on Century Center loan, 2200 Building
3/23/89	Prudential letter to White & Associates re: Disbursement Request from Removal Fund – 8 th floor, 2200 Century Parkway
8/6/90	Affidavit of Roderick T. White for the benefit of Prudential to induce Prudential to disburse the amount of \$194,061.80 from the Removal Fund
8/15/90	Letter from White & Associates Real Estate to Prudential re: Notification of friable asbestos-containing materials still remaining on the 10 th floor of the 2200 Century Parkway Building
10/12/90	Letter from White & Associates Real Estate to Prudential re: 2200 Century Parkway – 10 th floor, Century Center Office Park, Atlanta, Georgia – update on status of removal of friable asbestos-containing materials remaining on the 10 th floor
2/14/90	Letter from White & Associates to Prudential re: Removal Fund Allocation, 2200 Century Park Building, Century Center Office Park, Atlanta, Georgia – request for supplementary disbursement of \$37,500
3/23/90	Letter from White & Associates to Prudential re: Removal Fund Submittals, 2200 Century Parkway – floors 2, 3, 6 and 7, Century Center Office Park, Atlanta, Georgia – Change Order 2

<u>Date</u>	<u>Description</u>
5/25/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Submittals, 2200 Century Parkway – 3 rd , 4 th and 9 th floors and 1 st through 9 th stairwells, Century Center Office Park, Atlanta, Georgia Removal Fund 2200 Closing Documents <u>Removal Fund Final Payments – 2600 Century Center</u> Printout re: asbestos abatement, 2600 Building, Century Center – disbursement of abatement total of \$2,416,860
6/13/90	Letter from White & Associates Real Estate to Prudential re: Removal Fund Allocation Final Request, 2600 Century Parkway Building, Atlanta, Georgia – request for final disbursement in the amount of \$250,000
6/7/90	Prudential letter to White & Associates re: Asbestos Removal Fund Final Disbursement
5/25/90	Letter from White & Associates Real Estate to Prudential enclosing information relating to the Removal Fund <u>2200 Century Center Removal Fund Final Payment</u> Printout re: asbestos abatement 2200 Building, Century Center – general disbursement \$3,383,140
10/10/90	Letter from White & Associates to Prudential re: Removal Fund Allocation Final Request, 2200 Century Parkway Building, Atlanta, Georgia – request for final disbursement in the amount of \$250,000

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EXHIBIT D

RIKER, DANZIG, SCHERER, HYLAND & PERRETTI LLP,
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Robert J. Gilson (RG 6618)

Attorneys for The Prudential Insurance Company of America

**IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE**

In re:

W.R. GRACE & CO., et al.,

Debtors.

Chapter 11

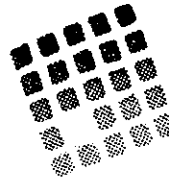
Case No. 01-01139 (JKF)
(Jointly Administered)

**ADDENDUM TO PROOF OF CLAIM OF PRUDENTIAL INSURANCE
COMPANY OF AMERICA FOR:**

**CENTURY CENTER IV
2600 CENTURY PARKWAY
ATLANTA, GEORGIA 30345**

VOLUME II OF II

EXHIBIT D-1



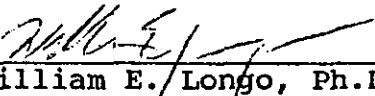
MATERIALS
ANALYTICAL
SERVICES

June 27, 1990

Re: Century Center IV
Atlanta, Georgia

Based on the constituent analysis of the fireproofing samples for the above-referenced project, it is my opinion that the samples analyzed are Mono-Kote 3, which was manufactured by W. R. Grace.

Worksheets reflecting our analysis are attached.



William E. Longo, Ph.D.

PIS 00060583

3597 Parkway Lane • Suite 250
Norcross, Georgia 30092
(404) 448-3200 FAX (404) 368-8256

BUILDING: Century Center IV
Atlanta, Georgia

The following bulk samples from the above-referenced buildings were analyzed and were used to form an opinion of the manufacturer and product.

<u>Bulk Sample #</u>	<u>Sample Location</u>	<u>Collected By</u>
12	Basement	McCrone
13	Basement	McCrone
14	1st Floor	McCrone
15	2nd Floor	McCrone
16	3rd Floor	McCrone
17	3rd Floor	McCrone
19	4th Floor	McCrone

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: M1565-12Date: 9/26/88Project Name: LAW ASSOCIATES/HATFIELDAnalyst: W. B. E.
Reviewer: _____Sample Identification: A88-120.18 #1 FROM BUILDING 2600 IN CENTURY
CENTER COMPLEX. BASEMENT - BEAM, N.E. QUADRANT.Gross Visual Description: LIGHT GRAY TO TAN WITH GOLD FLAKES
THROUGHOUT. FIBERS EXPOSED.

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	<u>10</u>
Amosite	_____
Crocidolite	_____
Tremolite/Actinolite	_____
Anthophyllite	_____

OTHER FIBROUS COMPONENTS:

Mineral/Rock wool	_____
Fibrous glass	_____
Cellulose	_____
Synthetic	_____
Talc	_____

NON-FIBROUS COMPONENTS:

Perlite	_____
Vermiculite	<u>40</u>
Mica	_____
Quartz	_____
Calcite	_____
Gypsum	_____
Diatoms	_____
Other	_____

Binders 50
ABUNDANT GYPSUM, CARBONATE IN LARGE AMOUNTS.EFFERVESCENCE; VERY WEAK.COMMENTS:

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: M1565-13Date: 9/26/88Project Name: LAW ASSOCIATES/HATFIELDAnalyst: D. B. E.
Reviewer: _____Sample Identification: A88-120.18 #2 FROM 2600 BUILDING OF CENTURY
CENTER COMPLEX. BASEMENT - BEAM, N.W. QUADRANT.Gross Visual Description: LIGHT GRAY TO TAN WITH GOLD FLAKES.
FIBERS EXPOSED.

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	10
Amosite	_____
Crocidolite	_____
Tremolite/Actinolite	_____
Anthophyllite	_____

OTHER FIBROUS COMPONENTS:

Mineral/Rock wool	_____
Fibrous glass	_____
Cellulose	_____
Synthetic	_____
Talc	_____

NON-FIBROUS COMPONENTS:

Perlite	_____
Vermiculite	39
Mica	_____
Quartz	_____
Calcite	_____
Gypsum	_____
Diatoms	_____
Other	_____

Binders	51
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GYPSUM ABUNDANT, CARBONATE IN SMALL AMOUNTS

EFFERVESCENCE; VERY WEAKCOMMENTS:

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: M1565-14Date: 9/26/88Project Name: LAW ASSOCIATES/HAFIELDAnalyst: W. B. E.
Reviewer: _____Sample Identification: A#8-120.18 #3 FROM 2600 BUILDING, CENTURY
CENTER COMPLEX. 1ST FLOOR - BEAM IN MECHANICAL ROOM.Gross Visual Description: TAN TO LIGHT GRAY WITH GOLD FLAKES THROUGHOUT.
FIBERS EXPOSED FROM MATRIX.

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	<u>10</u>
Amosite	_____
Crocidolite	_____
Tremolite/Actinolite	_____
Anthophyllite	_____

OTHER FIBROUS COMPONENTS:

Mineral/Rock wool	_____
Fibrous glass	_____
Cellulose	_____
Synthetic	_____
Talc	_____

NON-FIBROUS COMPONENTS:

Perlite	_____
Vermiculite	<u>41</u>
Mica	_____
Quartz	_____
Calcite	_____
Gypsum	_____
Diatoms	_____
Other	_____

Binders 49
GYPNUM PREDOMINANT, SMALL AMOUNT OF CARBONATEEFFERVESCENCE: VERY WEAKCOMMENTS:

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: M1565-15Date: 9/26/84Project Name: LAW ASSOCIATES/HATFIELDAnalyst: W. B. E.
Reviewer: _____Sample Identification: A88-120.18 #4 FROM 2600 BUILDING IN
CERTORY CENTER COMPLEX.Gross Visual Description: TAN TO LIGHT GRAY WITH GOLD FLAKES.
FIBERS THROUGHOUT MATRIX

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	<u>10</u>
Amosite	_____
Crocidolite	_____
Tremolite/Actinolite	_____
Anthophyllite	_____

OTHER FIBROUS COMPONENTS:

Mineral/Rock wool	_____
Fibrous glass	_____
Cellulose	_____
Synthetic	_____
Talc	_____

NON-FIBROUS COMPONENTS:

Perlite	_____
Vermiculite	<u>41</u>
Mica	_____
Quartz	_____
Calcite	_____
Gypsum	_____
Diatoms	_____
Other	_____

Binders 49
PREDOMINATED BY GYPSUM WITH A SMALL FRACTION OF CARBONATE.EFFERVESCENCE: VERY WEAKCOMMENTS:

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: 171565-16Date: 9/26/88Project Name: LAW ASSOCIATES/HATFIELDAnalyst: V. B. E.
Reviewer: _____Sample Identification: APP-120.18 # 5 FROM 2600 BUILDING OF
CENTURY CENTER COMPLEX. 3RD FLOOR - BEAM IN N.W. QUADRANT.Gross Visual Description: TAN TO LIGHT GRAY WITH GOLD FLAKES. FINE FIBERS
EXPOSED FROM MATRIX.

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	9
Amosite	_____
Crocidolite	_____
Tremolite/Actinolite	_____
Anthophyllite	_____

OTHER FIBROUS COMPONENTS:

Mineral/Rock wool	_____
Fibrous glass	_____
Cellulose	_____
Synthetic	_____
Talc	_____

NON-FIBROUS COMPONENTS:

Perlite	_____
Vermiculite	40
Mica	_____
Quartz	_____
Calcite	_____
Gypsum	_____
Diatoms	_____
Other	_____

Binders	51
<u>GYPSON ABUNDANT, CARBONATE PRESENT IN SMALL AMOUNTS</u>	

EFFERVESCENCE: VERY WEAKCOMMENTS:

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: 171565-17Date: 9/26/08Project Name: LAW ASSOCIATES/HATFIELDAnalyst: W.D.E.

Reviewer: _____

Sample Identification: A88-120.18 #6 FROM 2600 BUILDING OF
CENTURY CENTER COMPLEX, 3RD FLOOR - BEAM IN S.E. QUAD.Gross Visual Description: TAN TO LIGHT GRAY WITH GOLD FLAKES
THROUGHOUT. FIBERS EXPOSED FROM MATRIX.

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	<u>10</u>
Amosite	_____
Crocidolite	_____
Tremolite/Actinolite	_____
Anthophyllite	_____

OTHER FIBROUS COMPONENTS:

Mineral/Rock wool	_____
Fibrous glass	_____
Cellulose	_____
Synthetic	_____
Talc	_____

NON-FIBROUS COMPONENTS:

Perlite	_____
Vermiculite	<u>41</u>
Mica	_____
Quartz	_____
Calcite	_____
Gypsum	_____
Diatoms	_____
Other	_____

Binders 49
GYPSUM PREDOMINATES, CARBONATE IS A SMALL FRACTION.EFFERVESCENCE; VERY WEAKCOMMENTS:

MATERIALS ANALYTICAL SERVICES, INC.

BULK ANALYSIS SHEET

Project # - Spl #: 171565-19Date: 9/29/88Project Name: LAW ASSOCIATES/HATFIELDAnalyst: W.B.E.
Reviewer: _____Sample Identification: AKK-120.18 #8 FROM 2600 BUILDING IN
CENTURY CENTER COMPLEX, 4TH FLOOR BEAM IN EAST SIDE.Gross Visual Description: TAN TO LIGHT GRAY WITH GOLD FLAKES THROUGHOUT.
FINE FIBERS ARE EXPOSED.

ASBESTOS MINERALS:

Est. Vol. %

Chrysotile	10
Amosite	
Crocidolite	
Tremolite/Actinolite	
Anthophyllite	

OTHER FIBROUS COMPONENTS:

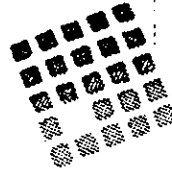
Mineral/Rock wool	
Fibrous glass	
Cellulose	
Synthetic	
Talc	

NON-FIBROUS COMPONENTS:

Perlite	
Vermiculite	
Mica	35
Quartz	
Calcite	
Gypsum	
Diatoms	
Other	

Binders 55
GYPSON PREDOMINATES WITH CARBONATE BEING A SMALL FRACTIONEFFERVESCENCE: VERY WEAK IN ISOLATED AREASCOMMENTS:

PIS 00060591



MATERIALS ANALYTICAL SERVICES, INC.
3597 Parkway Lane, Suite 250
Norcross, GA 30092
404/448-3200

TEM ANALYSIS: BULK ANALYSIS

PROJECT: PRUDENTIAL : CENTURY CENTER, 2600 BUILDING
SAMPLE NUMBER: ~~#~~ M1565-14
SAMPLE ID: 1st FLOOR-BEAR IN MECHANICAL ROOM.

DATE OF ANALYSIS: 6/26/90

ANALYST: H. B. Spohn

Asbestos Minerals: CHRYSOTILE (EDS)(DIFF)

Other Components: GYPSUM (EDS)(DIFF)
VERMICULITE (EDS)
DOLOMITE (EDS)(DIFF)

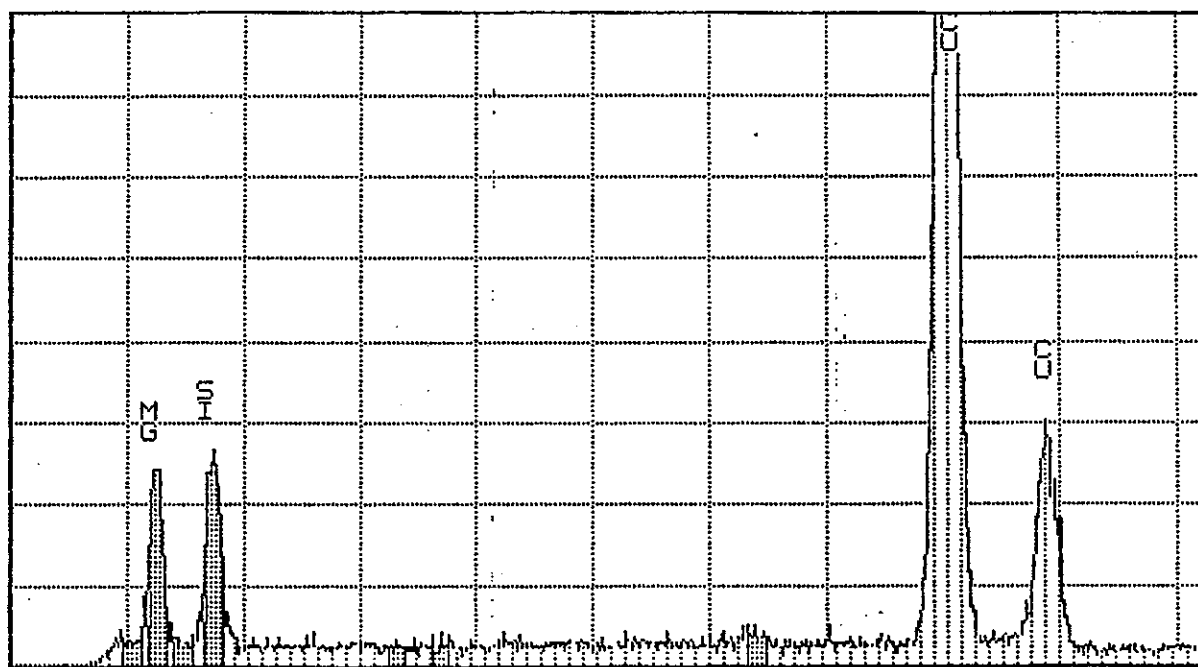
Comments:

MATERIALS ANALYTICAL SERVICES

TUE 26-JUN-90 17:34

Cursor: 0.000keV = 0

ROI (SIK α) 1.660: 1.810=1034



0.000

VFS = 256

10.240

23

M1565-14, CHRYSOTILE

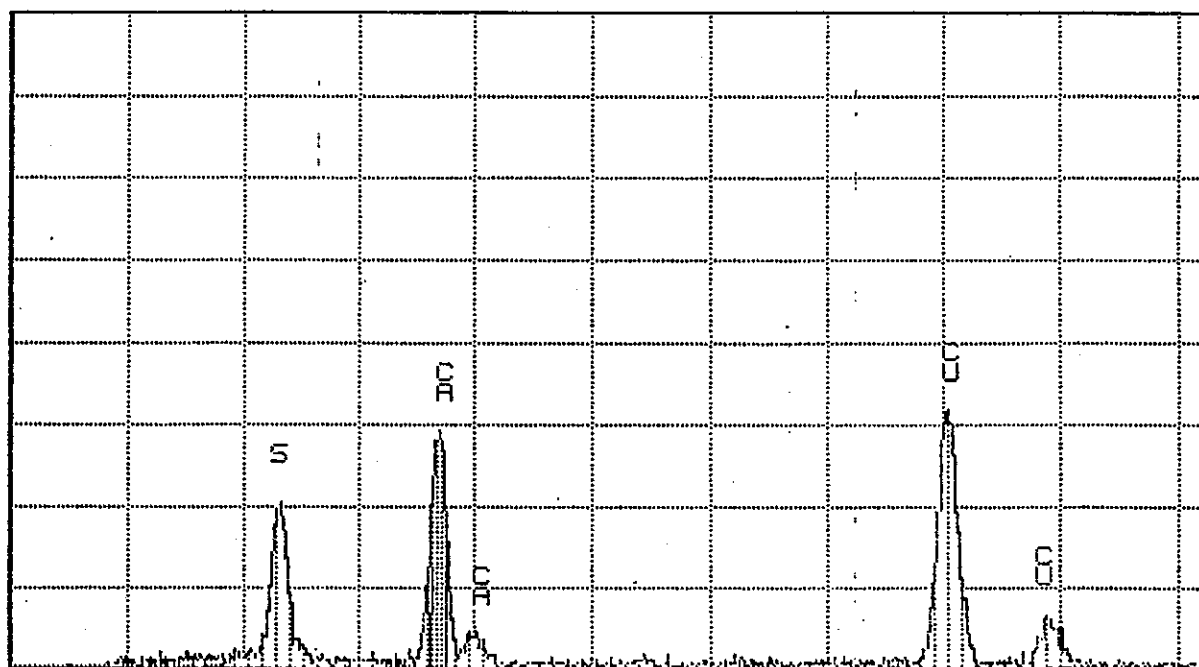
PIS 00060593

MATERIALS ANALYTICAL SERVICES

TUE 26-JUN-90 17:39

Cursor: 0.000keV = 0

ROI (SIK α) 1.660: 1.810=60



0.000

VFS = 256

10.240

8

M1565-14, GYPSUM

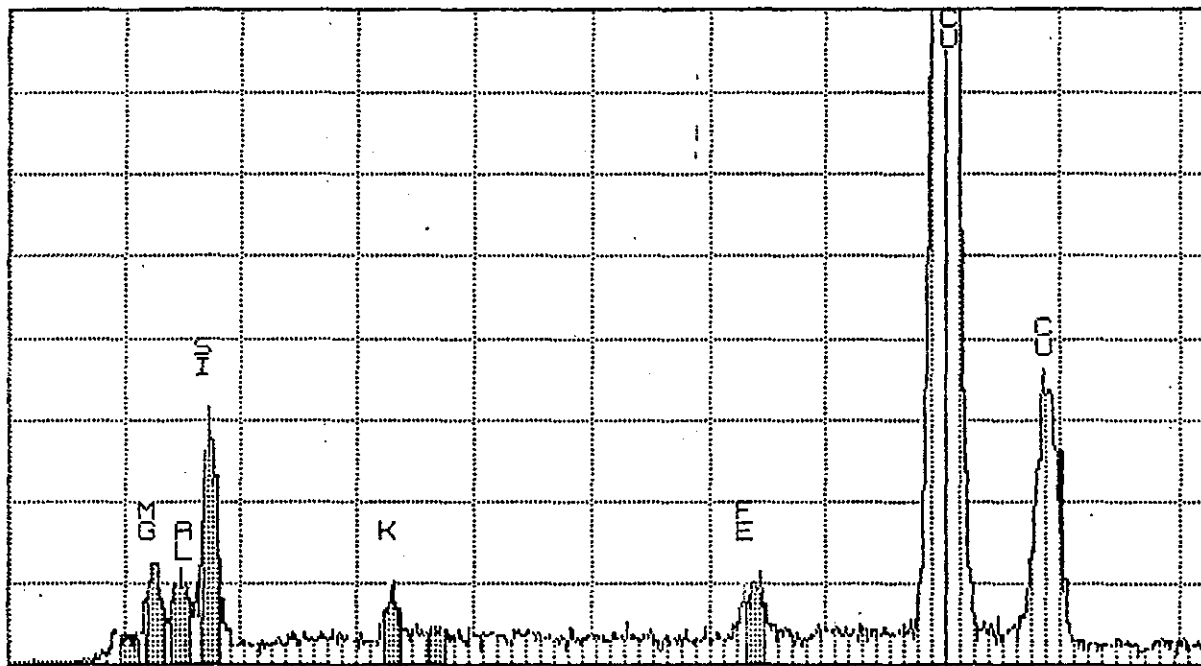
PIS 00060594

MATERIALS ANALYTICAL SERVICES

TUE 26-JUN-90 17:11

Cursor: 8.040keV = 692

ROI (SIK α) 1.660: 1.810=1145



0.000

VFS = 256

10.240

24

M1565-14, VERMICULITE

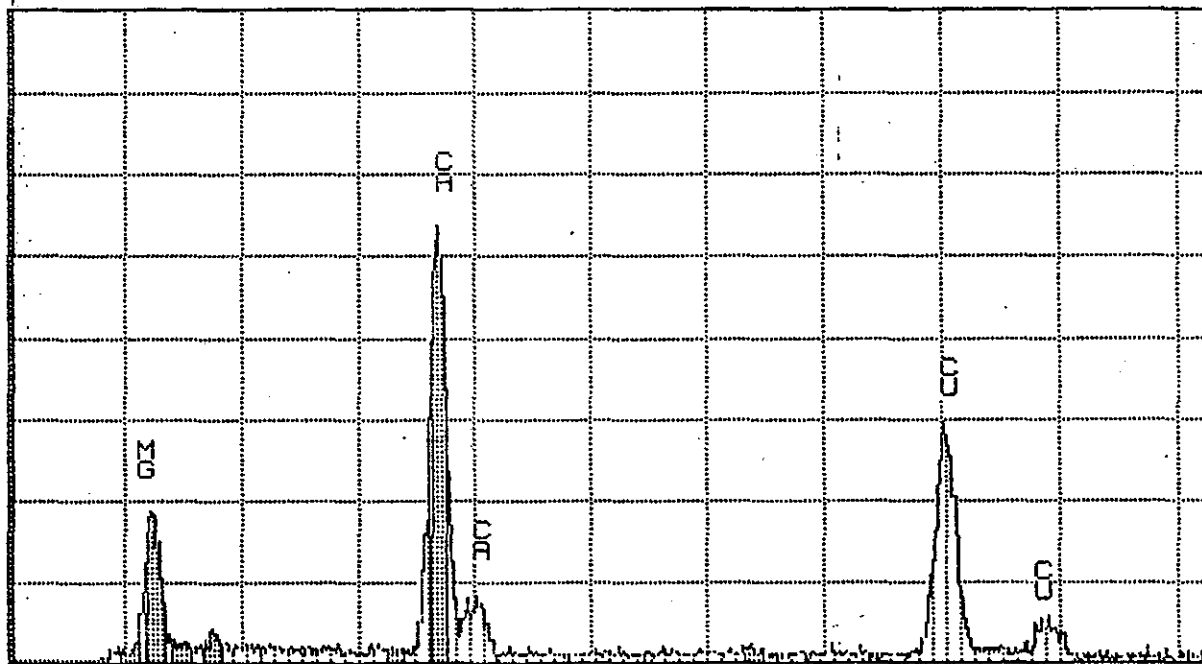
P18 00060595

MATERIALS ANALYTICAL SERVICES

TUE 26-JUN-90 17:37

Cursor: 0.020keV = 0

ROI (SIK α) 1.660: 1.810=136



0.000

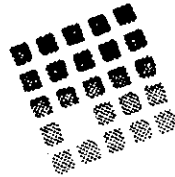
VFS = 256

10.240

5

M1565-14, DOLOMITE

PIS 00060596

MATERIALS
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ADDITIONAL BULK ANALYSIS

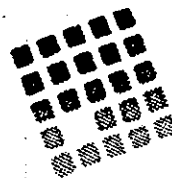
Sample # 171565-14Date 6/25/90Analyst W.B. Eych

ACID DISSOLUTION

(1) Petri dish plus sample:	<u>8.2704</u> g
(2) Petri dish minus sample:	<u>7.3747</u> g
(3) Original sample weight:	<u>0.8957</u> g
(4) Filter weight:	<u>0.0609</u> g
(5) Clean petri dish weight:	<u>7.3185</u> g
(6) Final sample weight plus filter and petri dish:	<u>7.7277</u> g
(7) Final sample wt: ((6) - [(4) + (5)])	<u>0.3483</u> g
(8) Percent residue wt: ((7)/(3) x 100)	<u>38.9</u> %
(9) Amount in solution: (100 - (8))	<u>61.1</u> %

PIS 00060597

3597 Parkway Lane • Suite 250
Norcross, Georgia 30092
(404) 448-3200



MATERIALS
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SERVICES

ADDITIONAL BULK ANALYSIS

STARCH VERIFICATION

Sample # M1565-14

Date 6/26/90

Analyst W. B. Egle

1) Sample Analyzed before/after acid dissolutions

Starch observed:

no ☒

yes ☐

Iodine test
(ceiling tile only)

positive ☐

negative ☐

PIS 00060598

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Norcross, Georgia 30092
(404) 448-3200

Report on Representative Sampling of Asbestos - Containing Fireproofing

This report has been prepared by Richard L. Hatfield relating to The Prudential Insurance Company of America, et. al. vs. United States Gypsum Company, et. al., Civil Action Nos. 87-4227 and 87-4238 (HAA).

At the request of The Prudential Insurance Company, Law personnel made site visits to Prudential buildings which are the subject of this litigation. Among the purposes for these visits were to confirm the presence, location and homogeneity of the asbestos - containing fireproofing materials and to collect representative samples of the asbestos - containing fireproofing materials. Based on these site visits and other material I have reviewed, I am of the opinion that the samples collected are representative of the asbestos - containing fireproofing found in the buildings.

1100 Milam Building, Houston, TX

Law conducted a visual survey of the 1100 Milam Building and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Eleven representative bulk samples of this material were collected throughout the building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

130 John St. Building, New York, NY

Law conducted a visual survey of the 130 Johns St. Building and collected fireproofing samples in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Three additional representative bulk samples of this material were collected to supplement eight other samples collected by McCrone Environmental. The samples were collected throughout the floors. An additional eight representative bulk samples were collected during a 1991 survey. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

First Florida Tower, Tampa, FL

Law conducted a visual survey of the First Florida Tower and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Ten representative bulk samples of this material were collected throughout the building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Century Center Buildings 2200 and 2600, Atlanta, GA

Law conducted a visual survey of the Century Center Buildings 2200 and 2600 and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of

asbestos - containing fireproofing is located in these buildings. Fourteen representative bulk samples of this material were collected throughout the 2200 building and five representative bulk samples were collected from the 2600 building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Chatham Center/Hyatt in Pittsburgh, PA

Law conducted a visual survey of the Chatham Center/Hyatt and collected fireproofing samples in 1988. Our observations and sampling indicated only one type of asbestos - containing fireproofing located on floors ground through ten. Seven representative bulk samples of this material were collected throughout the floors. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Northland Towers (East & West), Southfield, MI

Law conducted a visual survey of the Northland Towers (East & West) and collected fireproofing samples in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in these buildings. Eleven representative bulk samples of this material were collected from the East Tower and sixteen representative samples from the West Tower. The samples were collected throughout each tower. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Northwest Financial Building, Bloomington, MN

Law conducted a visual survey of the Northwest Financial Building and collected fireproofing samples in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Four additional, representative bulk samples of this material were collected throughout the floors to supplement other representative samples collected by other consultants. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Pru Plaza, Buildings A & B, Denver, CO

Law conducted a visual survey of the Pru Plaza, Buildings A & B and collected fireproofing samples in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in these buildings. Eight representative bulk samples of this material were collected throughout the A building and four representative bulk samples were collected from the B building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Southdale Office Complex, Edina, MI

Law conducted a visual survey of the Southdale Office Complex and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Fourteen representative bulk

samples of this material were collected throughout the building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Embarcadero I and II, San Francisco, CA

Law conducted visual surveys of Embarcadero I and II and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in each of these buildings. Four representative bulk samples of the fireproofing material located in Embarcadero I were collected to supplement seven samples previously obtained by McCrone and 20 representative bulk samples were collected throughout Embarcadero II. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Renaissance Tower, Dallas, TX

Law conducted a visual survey of the Renaissance Tower and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Fifteen representative bulk samples of the fireproofing material were collected throughout most of the building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

5 Penn Center, Philadelphia, PA

Law conducted a visual survey the 5 Penn Center building and collected fireproofing samples in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Fifty-one representative bulk samples of the fireproofing material were collected throughout the building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Twin Towers (Gaslight/North and South), Atlanta, GA

Law conducted a visual survey of the Twin Towers (Gaslight/North) and collected fireproofing samples in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Twenty-one representative bulk samples of the fireproofing material were collected throughout the building. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Law conducted a visual survey of the Twin Towers (South Tower) and collected fireproofing samples in 1989. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in this building. Forty - one representative bulk samples of this material were collected throughout the floors. These samples as well as other

samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Prudential Plaza, Newark, NJ

Law conducted a visual survey of the Prudential Plaza office building and Mall and collected two fireproofing samples from the 5th floor of the office building in 1988. Our observations and sampling indicates only one type of asbestos - containing fireproofing is located in the office building and a different type of fireproofing in the Mall. Twelve representative bulk samples of the fireproofing material located in the Mall were collected by K & D asbestos consultants. These samples as well as other samples collected by others were submitted to Materials Analytical Services (MAS) for constituent analysis.

Hunt Valley Marriott, Hunt Valley, MD

During our 1988 site visit one sample representing the chrysotile asbestos - containing fireproofing was collected. Additionally two samples representing the amosite asbestos - containing fireproofing were collected by K & D asbestos consultants and were submitted to Materials Analytical Services (MAS) for constituent analysis.

Short Hills Office, Short Hills NJ

Two representative samples of fireproofing were collected by K & D asbestos consultants from the centrally located air handling rooms of the 2nd and the 4th floors of Short Hills Office, Short Hills NJ. building and were submitted to Materials Analytical Services (MAS) for constituent analysis.

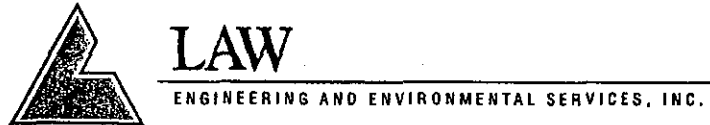
Brookhollow, Houston, TX

At the request of The Prudential Insurance Company, four representative samples of fireproofing were collected by BCM asbestos consultants from the centrally located elevator shafts of the 4th, 5th and 7th floors of Brookhollow, Houston, TX and were submitted to Materials Analytical Services (MAS) for constituent analysis.

Signed

Richard L. Hatfield

Richard L. Hatfield
Corporate Consultant
August, 1996



**REPORT PREPARED
BY
RICHARD L. HATFIELD
RELATING TO THE
PRUDENTIAL INSURANCE COMPANY OF AMERICA,
ET. AL.
VS.
UNITED STATES GYPSUM COMPANY, ET. AL.
JULY, 1996**

Report of Inspection and Evaluation of Asbestos - Containing Materials

This report has been prepared by Richard L. Hatfield relating to The Prudential Insurance Company of America, et. al. vs. United States Gypsum Company, et. al., Civil Action Nos. 87-4227 and 87-4238 (HAA).

I obtained Bachelor of Science degrees in Experimental Statistics and Geology from North Carolina State University. I am employed as a consultant in my capacity as Assistant Vice President and Senior Corporate Consultant for Law Engineering and Environmental Services, Inc., Atlanta, Ga. I have been employed at Law since December, 1987. Prior to my employment at Law, I served as Director of Services for McCrone Environmental Services, Inc. for five years. I began my career relating to asbestos, serving as a Technical Field Advisor to the US Environmental Protection Agency's Asbestos in Schools Program. I was appointed as an expert advisor to the US Environmental Protection Agency's negotiated rule making committee to promulgate new regulations for asbestos in schools pursuant to AHERA (Asbestos Hazards Emergency Response Act).

During my years dealing with asbestos - related problems, I have been an instructor in over fifty (50) courses and seminars on asbestos in buildings. I have developed protocols for the collection and analysis of asbestos in settled dust of buildings with asbestos - containing building materials, and consulted with the US Environmental Protection Agency (EPA) and the American Society for Testing and Materials (ASTM) in establishing guidelines for these protocols. These protocols have been accepted by both the scientific and the legal community.

As a consultant, I have served hundreds of public and private building owners regarding the proper response they should make regarding the disposition of asbestos in their properties. As part of my consulting services I have acquired extensive experience in the field of identifying products by visual and microscopic examination of the materials and their components and in the field of collection and analysis of the amount and frequency of asbestos release from asbestos - containing building materials.

I have been qualified as an expert in numerous asbestos property damage cases in the fields of asbestos materials characterization which includes asbestos sampling and analysis by various microscopy techniques and asbestos management, including USG v. Admiral Insurance Co. et. al. 1994 WL 605841, Nov. 3 1994 and City of Greenville v. W.R. Grace & Co., 640 F. Supp. 559 (D.S.C. 1986), aff'd City of Greenville v. W.R. Grace & Co., 827 F.2c (4th Cir. 1987). Upon information and belief, the United States Court of Appeals for the Fourth Circuit relied upon my testimony about the asbestos contamination of the Greenville City Hall Building as proof of property

damage. (See attachment for listing of the last five years of deposition and court testimony.)

I have also participated in or reviewed a number of experiments and demonstrations involving asbestos - containing materials (ACM) in which either the asbestos - containing materials or their residue were disturbed during routine building operations and activities which resulted in the release of significant levels of airborne asbestos - containing dust. Measurements were made of either airborne or surface asbestos dust released during these operations. Such tests have demonstrated that significant numbers of asbestos fibers are released when these routine building operations and activities are undertaken. This release of asbestos fibers into the building's environment results in elevated airborne levels for some time and leads to the contamination of building and property surfaces with asbestos dust. For the purposes of this report, the word "contamination" is intended to convey the idea that the surfaces analyzed contain asbestos fibers to a degree far in excess of what would be expected on a surface which was not in proximity to an asbestos - containing material that was releasing asbestos fibers. In my experience in collecting, analyzing and reviewing thousands of dust samples such as the ones collected in this case, a dust sample taken from areas without asbestos - containing materials or some other identified source will reveal little to no contamination. Therefore, dust samples collected in the vicinity of an asbestos - containing material which reveal significant numbers of asbestos fibers demonstrate release from the material present in addition to demonstrating surface contamination.

Air sampling techniques can prove to be quite useful in measuring airborne asbestos concentrations during work practices which may disturb asbestos-containing materials, debris or dust. Ambient air sampling (sampling during times of no disturbance) can be quite misleading and are not good techniques to determine ACM's condition, or to make determinations as to levels of surface contamination. Ambient air sample results should not be used solely to make decisions about corrective actions since they do not provide sufficient information about airborne levels generated during many routine building activities. Defendants' representatives have collected a series of ambient air samples in and around these buildings. Some observations were made by myself and other Law personnel which would indicate that some of the sampling was not properly conducted. These observations included poorly placed sampling pumps, filters not positioned properly and equipment failure.

Asbestos fibers which are released from deteriorating ACM or from the disturbance of ACM will disburse into the ambient air within the buildings, settling on various surfaces in the building, contaminating various surfaces including furnishing, carpeting, draperies, supplies, books and other materials in buildings. The asbestos dust on these surfaces are subject to reentrainment into the air when this dust is disturbed during routine building activities. The reentrained fibers are as much of a concern as newly released asbestos fibers. The asbestos contamination will remain unless special cleaning procedures are employed to eliminate the asbestos - containing dust from non - porous surfaces or the proper removal and disposal of porous

materials, to which asbestos fibers customarily attach themselves. If ACM which is releasing asbestos fibers is left in areas where surfaces have been cleaned, these surfaces in time will become re-contaminated.

The dust sampling technique is accomplished by running a battery operated air sampling pump, equipped with a membrane filter cassette identical to those used in air sampling over a designated area of a surface. A nozzle fashioned from 1/4 inch diameter tubing is attached to the open nipple of the cassette cap (prior to August 1989 open face cassette). By operating the pump at 2 liters / minute the nozzle face velocity should be approximately 100 cm / second. The actual sample collection process involves delineating a surface area of interest. This is accomplished by measuring a selected area of at least 100 square centimeters. The size of the sampled area may also be measured after the collection is complete. Once the pump is activated, the nozzle is passed along the surface in a manner sufficient to vacuum up any settled dust. Light rubbing of the surface may be necessary to dislodge any lightly attached materials, hard rubbing is not necessary. The vacuuming should continue over the entire sample area until the operator is satisfied that all the dust which can be removed is removed. Upon completion, the sampling cassette should be turned upright and with the pump still running, the cap should be loosened and the nozzle removed and placed into the cassette. After replacing the cap, the pump may be turned off and the cap plug replaced to seal the cassette. These samples are documented as to their location, surface and area sampled, along with other pertinent project information. The filters are then transported to a laboratory for analysis.

The materials collected on the filter are then prepared for analysis under the electron microscope. The microscopist identifies and quantifies asbestos fibers in the microscope grid opening and reports the findings in fibers per unit area such as fibers per square centimeter or fibers per square foot using a mathematical calculation.

Having developed the use of dust sampling to make determinations about asbestos fiber release and contamination in the 1980's, I have followed the development of this sampling and analysis technique to present. To my knowledge, there has been only one significant change to the collection process and none to the analysis process. This collection change occurred about mid-1989 following the EPA's dust sampling workshop. Prior to this workshop surface dust samples were collected using an open face cassette. After making some determinations as to the collection efficiency of the open face cassette versus the use of close face cassette equipped with a sampling nozzle, I made the recommendation to the workshop that future sampling be conducted using the nozzle rather than the open face cassette, which was accepted and incorporated in EPA's method. Upon return from the workshop approximately August 1, 1989, I instructed Law personnel to begin using the nozzle for sampling. This is the sampling equipment described in the current ASTM protocol. As part of their work on this case, Compass Environmental collected pair samples using both collection methods. Based on the analytical data generated by this study, one must conclude the open face cassettes were less efficient in the collection of the asbestos dust. On the

average, the open face cassettes collected only 10 percent of the samples now collected using the nozzle equipped cassette.

The following table illustrates the results of the study.

Comparison of Open Face (PR) verses Nozzle Cassettes

	Building	AB (Nozzle) *	PR (Open Face) *	Factor
1	Renaissance Tower	7.7 Billion	1.8 Billion	4.28
2	Pru Plaza (Newark, NJ.)	8.8 Billion	467 Million	18.9
3	Embarcadero 1	770 Million	229 Million	3.36
4	Embarcadero 2	5.5 Billion	625 Million	8.78
5	5 Penn Center	8.5 Billion	525 Million	16.19
* Average per sq. ft. asbestos levels from three samples in each building			Total	51.51
			Average	10.3

As requested, I and other Law personnel have inspected and collected samples of various asbestos - containing materials and dust samples in the buildings which are the subject of this litigation. Law personnel also accompanied defendants' representatives during their inspections. During most of these visits, reports, photographs and, in some cases, video tape documentation were generated. The subject asbestos-containing materials in these buildings are friable fireproofing which is generally sprayed on to steel beams, columns and floor decking.

The inspection process included a physical examination of the materials to determine the presence, location and use of the materials in the buildings and a determination of conditions. The level of contamination was measured in most of the facilities by the collection and analysis of dust samples. The findings of the inspection and sample collection were documented in various forms including reports, notes, logs, 35 mm photographs and video tape.

In some cases demonstrative activities were conducted and video taped to show how certain activities such as opening and closing a ceiling tile or disturbing the asbestos - containing materials release asbestos. These videos clearly demonstrate when asbestos - containing dust and debris or the in place asbestos-containing materials are disturbed, asbestos-containing dust becomes airborne and results in contaminating surfaces below. These videos make use of a lighting technique referred to as the Tyndell light effect to illuminate any airborne particles. This lighting effect is the same as the observation of airborne dust through a stream of sunlight through a window. Dust samples were taken on the top of surfaces above the ceilings prior to the demonstrations and from the plastic covered floor following the demonstrations. These samples demonstrate that asbestos - containing dust was disturbed and that typical maintenance activities result in contaminating surfaces below. For safety, these

demonstrations were conducted in contained areas to prevent the spread of the released asbestos and were thoroughly cleaned following the demonstrations.

The following table illustrates the results of the dust samples collected before and after the video demonstrations.

	Building	Above Ceiling (Before) *	Floor Below (After) *
1	Prudential Plaza (Newark, NJ.)	18.9 Billion	11.5 Billion
2	5 Penn Center	6.7 Billion	8.8 Billion
3	Embarcadero Center 1	37.8 Billion	14.8 Billion

* Sample results listed above are asbestos structures per sq. ft.

In addition to the general information above, I will also testify about the collection, analysis and interpretation of the dust samples collected at the Prudential buildings by both Compass Environmental and Law Companies.

The general findings are listed below.

1. The overall asbestos control programs are in place and functioning.
2. Since their discovery, a significant amount of the ACM has been removed. Some areas of the ACM have been encapsulated or enclosed, while other areas of the remaining materials have been repaired or patched under the O&M programs and will require continuous monitoring until such time as they are removed.
3. In general, friable ACMs can be classified in the following conditions. Materials which appear in good condition display very little damage (less than 1%), no asbestos - containing debris is present and conditions exist where only slight or no contamination is or should be present. Materials described as in fair condition indicates some damage was observed (1 - 10%), some asbestos - containing debris is present and levels ranging from moderate to extreme contamination would likely be or is present. Poor condition materials have significant damage (greater than 10% overall), significant amounts of asbestos - containing debris present and heavy to extreme levels of contamination very likely to be or are present. These condition categories are consistent with as AHERA's (Asbestos Hazards Emergency Response Act) damaged categories of no damage, damaged, and significantly damaged ACM. Additionally, AHERA use the potential for damage to add two additional categories, potential for damage and potential for significant damage. Generally, current conditions are the best indication of a material's potential for damage, unless there are

indications of future changes in the material's environment which would either increase or decrease the material's potential for damage.

4. The remaining materials located in the Prudential buildings are generally in a fair condition with some areas in poor condition. Additional areas of materials were observed in poor condition prior their to removal.
5. The conditions of the fireproofing in the Prudential buildings were generally a result of water damage, air erosion, vibration, building movement, physical contact causing abrasions, scratches, and gouges, delamination of materials due to the loss of either cohesion or adhesion, and cracking.
6. Nearly all of the dust samples collected and analyzed established some level of contamination; many samples demonstrated levels of contamination in excess of one (1) billion asbestos structures per square foot (extremely contaminated). Generally, as one might expect, the dust samples taken in closer proximity of the ACM resulted in the higher levels of contamination.
7. All of the building personnel encountered during the inspections were aware of the presence of the asbestos materials in their buildings.

Building Specific Information and Opinions

1. Prudential Plaza Denver, Co. - The fireproofing materials where located in the two low rise buildings A and B. These buildings were inspected by myself in 1988 and the fireproofing materials were observed in fair condition. During this visit ten dust samples were collected in various locations in each building. The analytical results of these dust samples demonstrated fiber release, and contamination. The results ranged from BDL (Below Detectable Limit) to 1.1 billion asbestos structures per square foot. Note that these dust samples were collected using the open face method and should be considered conservative. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
2. Century Center Atlanta, Ga. - In 1988 Law personnel collected ten dust samples throughout the 2200 building. The analytical results of these dust samples ranged from 1.1 million to 11.7 billion asbestos structures per square foot. Note that these dust samples were collected using the open face method and should be considered conservative. This material was in fair to poor condition. Eight dust samples were collected in the 2600 building and resulted in 303 thousand to 19.1 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. This material was also in fair to poor condition. It is my opinion that the subject

fireproofing in these buildings released asbestos fibers and debris and caused contamination in these buildings.

3. Embarcadero One San Francisco, Ca. - In 1988 fifteen dust samples were collected during an inspection. The results of these early dust samples ranged from BDL to 7.9 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. In 1995, I made an additional inspection of the materials remaining in the building and found them in fair to poor condition. During this inspection I collected four additional dust samples, which, when analyzed, resulted in 7.7 billion to 11.3 billion asbestos structures per square foot. Additionally, 3 dust samples collected by Compass Environmental also confirmed the presence of asbestos contamination at levels between 501 million to 1.2 billion asbestos structures per square foot. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
4. Embarcadero Two San Francisco, Ca. - In 1988, nine dust samples were collected throughout the first eleven floors where the asbestos - containing fireproofing is located. The results of these samples showed a contamination level of BDL to 89 million asbestos structures per square foot. Note these dust samples were collected by the open face method and should be considered conservative. During a 1994 inspection by Law personnel, seven additional dust samples were collected, of which three were analyzed. The results indicated contamination levels between 1.8 billion and 5.1 billion asbestos structures per square foot. I also inspected this building during my 1995 visit and collected three additional dust samples. These samples resulted in contamination levels between 2.4 billion to 25.4 billion asbestos structures per square foot. Additionally, three dust samples collected by Compass Environmental also confirmed the presence of asbestos contamination at levels between 567 million to 12.8 billion asbestos structures per square foot. The fireproofing materials in this building should be considered in fair to poor condition. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
5. First Florida Tower Tampa, Fla. - During a 1988 inspection by Law personnel the in place asbestos - containing fireproofing appeared in good condition but fine debris was observed. Eleven surface dust samples were collected from various locations in the building. These samples, when analyzed, demonstrated contamination levels from BDL to 729 millions asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. In 1995, I inspected the remaining asbestos- containing fireproofing and collected four additional dust samples. These dust samples showed a contamination level of between 1.1 billion and 36.8 billion asbestos structures per square foot. Most of the remaining asbestos - containing fireproofing was observed in rather poor condition. It is my opinion

that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.

6. Chatham Center/Hyatt Pittsburgh, Pa. - Reports from consultants indicated that the fireproofing located in the first ten floors showed signs of damage. These conditions were confirmed by a 1988 inspection by Law personnel. During this inspection nine dust samples were collected. The results of these dust samples demonstrated levels of contamination between 67.4 thousand and 75 million asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
7. 5 Penn Center Philadelphia, Pa. - Reports by asbestos consultants indicated that the asbestos - containing fireproofing was damaged and deteriorating and became airborne when disturbed. Inspection of the fireproofing by Law personnel confirmed these conditions and five dust samples showed contamination levels between 149 thousand and 85 million asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. An additional inspection by myself of the remaining material on the 35th floor revealed asbestos - containing fireproofing in very poor condition with much delamination of the fireproofing and debris observed. Five additional dust samples obtained during this inspection revealed contamination levels between 2.7 billion to 9.1 billion asbestos structures per square foot. Additionally, 3 dust samples collected by Compass Environmental also confirmed the presence of asbestos contamination at levels between 4.1 billion to 13.1 billion asbestos structures per square foot. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
8. 130 Johns St. New York, NY. - The asbestos - containing fireproofing in this building is applied primarily to the structural columns of the building. However, the fireproofing is accessible above the drop ceiling at the top of the columns, at certain exterior columns and in mechanical spaces. During a 1988 inspection by Law personnel, areas of fireproofing were observed damaged fireproofing and resulting debris was observed. Eleven surface dust samples and a HVAC pre-filter sample were collected during this visit. The resulting analyses indicated contamination levels ranging from BDL to 26.3 million asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. In 1995 I inspected this facility and observed material in fair to poor condition. I collected an additional four dust samples. These samples indicated contamination levels between 1.0 billion and 24.3 billion asbestos structures per square foot. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.

9. Hunt Valley Marriott, Hunt Valley, Md. - During inspections by asbestos consultants, the fireproofing materials were observed in damaged and deteriorating conditions. Law personnel inspected the facility in 1988 and confirmed similar observations. During Law's inspection, six surface dust samples and a HVAC pre-filter sample were collected. The ensuing analysis indicated contamination levels between BDL and 2.1 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
10. 1100 Milam, Houston, TX. - Law personnel inspected this facility in 1988 and observed some of the fireproofing in damaged condition. During this inspection fifteen dust samples were collected throughout the building. The results of these dust samples demonstrated contamination levels between 1.7 million and 5.7 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
11. Northland Towers, Southfield, Mi. - Law personnel inspected the tower buildings in 1988. During the inspection the asbestos - containing fireproofing was observed in fair condition with some areas in poor condition. Six dust samples were collected from the East and West towers. These dust samples had asbestos concentrations between 78 thousand and 40 million asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. These conditions were confirmed visually by my inspection in 1996 and by three additional dust samples collected in the West Tower and three additional dust samples collected in the East Tower by Compass Environmental. The results of these samples ranged from 2 billion to 5.9 billion asbestos structures per square foot in the West Tower and from 186.5 million to 3.1 billion asbestos structures per square foot in the East Tower. It is my opinion that the subject fireproofing in these buildings released asbestos fibers and debris and caused contamination in these buildings.
12. Northwest Financial Building, Bloomington, MN - During a 1988 inspection by Law personnel the in place asbestos - containing fireproofing appeared in good condition but fine debris and dust were observed. Fifteen dust samples were collected during this inspection. The results of the dust samples indicated contamination levels which ranged from BDL to 2.6 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.

13. Prudential Plaza, Newark, NJ - Law personnel inspected the fireproofing in the mall area and observed delamination and debris present on tops of ceiling tiles. The fireproofing in the office building was observed and dust samples were collected. The results were between BDL and 437 thousand asbestos structures per square foot. In 1995 I inspected the mall areas and the 5th floor of the office complex. I observed the fireproofing in the mall areas to be in fair to poor condition with much debris in many areas. I also inspected the asbestos - containing fireproofing on the 5th floor of the office complex. This material was in poor condition. During my inspection seven dust samples were collected from both areas. The results of these dust samples indicated contamination levels between 1.1 billion to 26.6 billion asbestos structures per square foot. Additionally, 3 dust samples collected by Compass Environmental also confirmed the presence of asbestos contamination at levels between 2.2 billion to 21.7 billion asbestos structures per square foot. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
14. Renaissance Tower, Dallas TX - Law personnel inspected the building in January of 1989. Observations of fireproofing debris and dust were made. Nine surface dust samples were collected and analyzed. The results indicated contamination levels between BDL and 10.9 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. An additional inspection was made by Law personnel in 1996 and confirmed the condition of the remaining fireproofing in fair condition. Additionally, three dust samples collected by Compass Environmental confirmed the presence of asbestos contamination at levels between 2.2 billion to 17.0 billion asbestos structures per square foot. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
15. Southdale Office Complex, Edina, MN - In February of 1989 Law personnel inspected the complex and observed fireproofing debris and dust. During the inspection seven dust samples were collected. the analysis of these dust samples indicated contamination levels between BDL and 13.9 billion asbestos structures per square foot. Note these dust samples were collected using the open face method and should be considered conservative. Some air samples were taken during an operations and maintenance procedure which demonstrated elevated airborne concentrations. It is my opinion that the subject fireproofing in this building released asbestos fibers and debris and caused contamination in this building.
16. Twin Towers, Atlanta, GA - Inspections by Law personnel in 1986 and in 1989 observed fireproofing materials in poor condition, with much dust and debris on surfaces below. This condition was confirmed by my inspection in 1995 of the remaining fireproofing on the 21st floor. Four dust samples collected on this floor shows contamination levels between 9.5 billion to 28.3 billion asbestos

structures per square foot. It is my opinion that the subject fireproofing in these buildings released asbestos fibers and debris and caused contamination in these buildings.

17. Brookhollow, Dallas TX - The asbestos - containing fireproofing was removed in 1986 and 1987 prior to occupancy by a new tenant.
18. Short Hills Office Complex, Short Hills, NJ - The asbestos - containing fireproofing was removed in 1984 prior to demolition of the building.

While the mere presence of asbestos - containing materials in a building does not necessarily mean asbestos fibers are being released or that there is an immediate health hazard present, its presence does present a continuing potential for the release of asbestos fibers into the building's environment and a potential for a health hazard. When asbestos materials are present and these materials have and are being disturbed or are deteriorating, asbestos fibers are being released into the air and on to surfaces below. This dust can, in turn being reentrained by the building maintenance staff, outside service personnel and some of the general building occupants. The U.S. EPA believes, as I do, that an increased exposure to asbestos results in an increase in occurrence of asbestos - related diseases. It was obvious from the inspections that the asbestos - containing materials in these buildings have and are continuing to release asbestos due to their presence, condition, activities and the building dynamics, despite reasonably good asbestos control programs. The asbestos - related problems and the asbestos contamination will continue until such time as the accessible, friable asbestos materials are removed.

Generally there are several ways to deal with in place ACMs. These include placing the materials under an Operations and Maintenance Program (O&M). This program is designed to control and minimize disturbance of the ACMs. While all ACM discovered in a building should be placed in an O&M program, only materials in good condition should remain in the program for an extended period of time. Sometimes an ACM is suitable for encapsulation or enclosure. These control methods are coating the ACM with a paint - like material or enclosing the ACM behind an air tight barrier. Both of these control methods should also be considered temporary and the treated ACM must still remain in the O&M program and under the watchful eye of the building's asbestos coordinator. The permanent solution to asbestos related - problems, is to remove the ACM and any contaminated materials which can not reasonably be cleaned, and replace them with new suitable non-asbestos containing materials.

The observations of the use, locations and conditions of the asbestos - containing fireproofing materials made during site visits of Prudential's buildings, the observed dust and debris on tops of ceiling systems and light fixtures coupled with the results of dust sampling conducted in various Prudential's buildings demonstrated building contamination and potential for exposure to airborne asbestos fibers. Additionally, given the location and conditions of the asbestos - containing fireproofing

materials, I would expect conditions and the problems to worsen in the future if not abated. Therefore the appropriate remedial action was to place the asbestos-containing fireproofing materials in an O&M program and schedule their removal and replacement. In my opinion, the corrective actions, in the above listed Prudential buildings were reasonable, appropriate and consistent with this approach.

This report summarizes opinions and testimony which I intend to provide in this case. These opinions are based on my work in these buildings and other buildings around the country, training, experience, studies and research of myself as well as studies and research of others scientists, asbestos professionals and governmental agencies. Attached to this report are my Curriculum Vitae, a list of testimony, a list of documents of which I may rely or use as exhibits, and a list of compensation rates.

Signed

A handwritten signature in cursive script that reads "Richard L. Hatfield". The signature is written in black ink and is positioned above the printed name.

Richard L. Hatfield

July, 1996

RICHARD L. HATFIELD
Senior Corporate Consultant
Assistant Vice President
Principal

EDUCATION: B.S., Experimental Statistics, North Carolina State University, 1974
B.S., Geology, North Carolina State University, 1978

PROFESSIONAL MEMBERSHIPS: American Industrial Hygiene Association
Asbestos Abatement Council - AWCI
ASTM D-22 Project & Steering Committee
National Asbestos Council
National Institute of Building Sciences

ARTICLES: "Exposure to Airborne Asbestos Associated With Simulated Cable Installation Above A Suspended Ceiling"
"Re-entrainment Of Asbestos From Dust In A Building With Acoustical Plaster"
"Asbestos Exposure During and Following Cable Installation in the Vicinity of Fireproofing"

CAREER SUMMARY

Mr. Hatfield joined Law Engineering in 1978 and was assigned to the U.S. EPA's "Asbestos in Schools" program in 1979. With the completion of that program and the initial attention of building managers towards the asbestos problems, Mr. Hatfield continued to assist Law by consulting with clients and developing methods to solve asbestos problems.

In 1982, Mr. Hatfield was recruited by a prominent laboratory, McCrone Environmental, to develop and manage their Atlanta based company. Their goal was to provide quality field and laboratory services for the asbestos abatement industry. These services included building surveys, air and project monitoring, consulting, expert testimony, and extensive, analytical and microscopy services. During this time, the company, McCrone

Environmental Services was recognized as a leader in the specialized fields of light and electron microscopy.

During 1987, some significant changes in the industry were made, notably the formulation of Law Associates, Inc. and its subsidiary Electron Microscopy Laboratory - Materials Analytical Services, Inc. Later in 1987, Mr. Hatfield returned to the Law Companies Group by joining Law Associates to help develop its consulting services and assist the laboratory in the development of special analytical services.

ASBESTOS RELATED EXPERIENCE

Mr. Hatfield has been actively engaged in asbestos related services since 1979 when he served as a Technical Field Advisor for U.S. EPA's "Asbestos in Schools Program". While serving on this program, Mr. Hatfield assisted in the formulation of New York State, New Jersey and the City of New York asbestos programs. He helped with training state and local governmental personnel, contractors and the general public in regulations, building surveys and in work procedures associated with the discovery, control and removal of asbestos-containing materials.

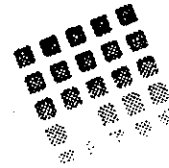
Upon the completion of EPA's project, Mr. Hatfield returned to Law and began its development of asbestos related services, particularly its analytical services. Mr. Hatfield's knowledge and experience has been sought to further many others education in dealing with asbestos-related problems. It should be noted that Mr. Hatfield's teaching experience began as a prime instructor in some of the earliest and most recognized training programs.

While directing McCrone Environmental, Mr. Hatfield began serving as a expert witness in property damage, "Cost Recovery" litigation. Utilizing the expertise of the microscopy laboratory, Mr. Hatfield developed procedures for the identification of asbestos-containing products and special methods for evaluation asbestos contamination in buildings. In addition to individual property damage cases, Mr. Hatfield testified at the Johns Manville Hearing for Property Damage settlements in Washington, D.C.

Since returning to Law, Mr. Hatfield has been involved with management and training of project engineers, consulting with a broad spectrum of clients and the development of special analytical services for the laboratory, Materials Analytical Services. Working closely with Dr. Longo and the other microscopists, Mr. Hatfield has shared his procedures and experience to further develop analytical testing services for building evaluation and property damage litigation.

Mr. Hatfield's knowledge and experience has been sought to further many others' education in dealing with asbestos-related problems. In addition to lecturing, Mr.

Hatfield has twice, taught the NIOSH Course NO. 582 "Sampling and Evaluating Airborne Asbestos Dust" for the University of Alabama in Birmingham, and was appointed as an expert advisor to EPA's negotiated rule-making committee to promulgate new regulations for asbestos in schools. These regulations are known as the Asbestos Hazard Emergency Response Act (AHERA) regulations. Additionally Mr. Hatfield has participated in the US EPA's Peer Review of research projects.

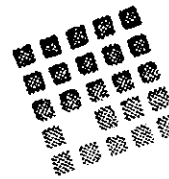


Prudential Dust Project Century Center

Summary of Results of Analyses by Transmission Electron Microscopy (TEM)

Client Name: Law Engineering/Atlanta
Client Job Number/Name: A88-120.18, Century Center
MAS Project Number: M2140

Client Sample Number	MAS Sample Number	Sample Location	Total Asbestos Structures Counted	Total Asbestos Structures Per Sq. Ft.
Building 2200				
1	M2140-1	Carpet Sample, Suite 90, File Storage Room Floor	18	1.996E+06
2	M2140-2	Dust sample, Suite 90, File Storage Room Shelves	30	2.325E+07
3	M2140-3	Carpet Sample, Suite 660, Paper Storage Room	91	1.497E+08
4	M2140-4	Dust Sample, Suite 650, Top of Kitchenette Cabinets	3	2.509E+06
5	M2140-5	Carpet Sample, 5th Floor Lobby, Entrance to Men's Bathroom	17	1.119E+06
6	M2140-6	Dust Sample, Suite 532, Top of Brown Phone Switching Box	22	2.177E+08
7	M2140-7	Dust Sample, 4th Floor Air Handler, Horizontal Surface above intake filters	91	1.194E+09
8	M2140-8	Dust Sample 3rd Floor Air Handler, Horizontal Surface above intake filters	107	1.172E+10
9	M2140-9	Dust Sample, Suite 220, Top of Isotec Switchbox	48	1.153E+08
10	M2140-10	Carpet Sample, First Floor, Intersection of Elevator Lobby and Main Lobby	26	4.264E+06
Building 2600				
11	M2140-11	Dust Sample, 4th Floor South Center Room, Back of Ceiling Tile	124	1.026E+10
12	M1240-12	Dust Sample, 4th Floor Air Handler Room, Top of Duct	100	3.878E+08
13	M2140-13	Dust Sample, 3rd Floor Air Handler Room, Top of Dust	94	5.953E+08
14	M2140-14	Carpet Sample, Suite 375 Left Rear Corner	62	5.215E+07
15	M2140-15	Dust Sample, Basement Mechanical Room, Top of Breaker Box	93	1.907E+10
16	M2140-16	Carpet Sample, Basement Mechanical Room Office Behind Door	39	2.825E+07
17	M2140-17	Carpet Sample, 1st Floor Lobby, West Side Base of Steps	3	3.026E+05
18	M2140-18	Carpet Sample, Service Elevator, Left Front Corner	10	7.959E+06



COPY
MATERIALS
ANALYTICAL
SERVICES

September 27, 1990

Ms. Teresa Partain
Law Associates, Inc.
114 Town Park Drive
Kennesaw, GA 30144

Dear Ms. Partain:

Enclosed are the TEM analyses of the dust samples we performed on your job: A88 120.18, Prudential, Century Center IV, 2200 Building and 2600 Building, which we received on January 12, 1989.

The samples were labelled:

1 - 18
(See Dust Sample Location Sheets)

Please call our office at your convenience should you have any questions concerning the analyses of your samples.

Sincerely,

William E. Longo, Ph.D.
President

WEL:pgd
Enc.
Ref: M2140

CLIENT NAME: Law Associates/Kennesaw

PROJECT NAME/NUMBER: A88-120.18, Prudential
Century Center IV, 2200 Building

MAS JOB# M2140

SUMMARY OF DUST SAMPLE LOCATION

SAMPLE #

- | | |
|----|---|
| 1 | Carpet Sample, Suite 90, File Storage Room Floor |
| 2 | Dust Sample, Suite 90, File Storage Room Shelves |
| 3 | Carpet Sample, Suite 660, Paper Storage Room |
| 4 | Dust Sample, Suite 650, Top of Kitchenette Cabinets |
| 5 | Carpet Sample, 5th Floor Lobby, Entrance to Men's Bathroom |
| 6 | Dust Sample, Suite 532, Top of Brown Phone Switching Box |
| 7 | Dust Sample, 4th Floor Air Handler, Horizontal Surface above Intake Filters |
| 8 | Dust Sample, 3rd Floor Air Handler, Horizontal Surface above Intake Filters |
| 9 | Dust Sample, Suite 220, Top of Isotec Switchbox |
| 10 | Carpet Sample, First Floor, Intersection of Elevator Lobby and Main Lobby |

CLIENT NAME: Law Associates, Kennesaw

PROJECT NAME/NUMBER: A88-120.18, Prudential
Century Center IV, 2600 Building

MAS JOB# M2140

SUMMARY OF DUST SAMPLE LOCATION

SAMPLE #

- | | |
|----|---|
| 11 | Dust Sample, 4th Floor
South Center Room, Back of Ceiling Tile |
| 12 | Dust Sample, 4th Floor
Air Handler Room, Top of Duct |
| 13 | Dust Sample, 3rd Floor
Air Handler Room, Top of Duct |
| 14 | Carpet Sample, Suite 375
Left Rear Corner |
| 15 | Dust Sample, Basement Mechanical Room,
Top of Breaker Box |
| 16 | Carpet Sample, Basement Mechanical Room
Office, Behind Door |
| 17 | Carpet Sample, 1st Floor Lobby,
West Side, Base of Steps |
| 18 | Carpet Sample, Service Elevator,
Left Front Corner |

Materials Analytical Services Inc.
 3597 Parkway Lane, Suite 250
 Norcross, Georgia 30092
 (404) 448-3200

TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	1	Filter Type:	47MM
MAS Log Number:	M2140-1	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8057
Microscopist:	<i>W. P. Smith</i>	Tot Area Examined:	80570
Reviewed By:	<i>Al Harrison</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:7

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	11	1	1.220E+06	1.109E+05
No. of Chrysotile Bundles:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	6	0	6.653E+05	0.000E+00
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		1.996E+06	
Total Asbestos Structures/1 sq ft (>= 5 um):	:		1.109E+05	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

Page: 1

Client LAW-Kennesaw
 Sample ID: 1
 MAS Log Number: M2140-1
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *W.P. Smith*
 Reviewed By: *W.P. Smith*
 Client Proj/ref: A88120.18

Sample Area 1.000 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8057
 Tot Area Examined: 80570
 Magnification: 15414X
 Dilution Factor: 1:7

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	2.50	0.20
2		c	f	2.30	0.20
3		c	f	2.00	0.20
4		c	f	1.00	0.15
5	1-2	c	m	3.00	0.20
6		c	f	1.00	0.15
7	1-3	c	f	7.50	0.30
8	1-4	c	f	1.50	0.15
9	1-5	c	f	1.00	0.15
10	2-1	c	f	1.50	0.15
11	2-2	c	m	1.80	0.15
12		c	m	3.60	0.20
13		c	m	2.30	0.15
14		c	m	3.60	0.15
15	2-3	c	f	2.50	0.50
16		c	f	4.50	0.20
17	2-4	c	m	2.00	0.20
18	2-5	c	f	3.00	0.20

Materials Analytical Services Inc.
 3597 Parkway Lane, Suite 250
 Norcross, Georgia 30092
 (404) 448-3200

TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	2	Filter Type:	47MM
MAS Log Number:	M2140-2	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8645
Microscopist:	<i>W. Smith / J. Harmon</i>	Tot Area Examined:	86450
Reviewed By:	<i>H. Smith</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:50

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	19	3	1.473E+07	2.325E+06
No. of Chrysotile Bundles:	2	2	1.550E+06	1.550E+06
No. of Chrysotile Clusters:	1	1	7.750E+05	7.750E+05
No. of Chrysotile Matrices:	2	0	1.550E+06	0.000E+00
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		2.325E+07	
Total Asbestos Structures/1 sq ft (>= 5 um):			4.650E+06	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

Page: 1

Client LAW-Kennesaw
 Sample ID: 2
 MAS Log Number: M2140-2
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *M. Smith / J. Harrison*
 Reviewed By: *H. J. Smith*
 Client Proj/ref: A88120.18

Sample Area 1.000 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8645
 Tot Area Examined: 86450
 Magnification: 15414X
 Dilution Factor: 1:50

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	1.00	0.15
2		c	m	3.50	0.20
3	1-2	c	b	1.00	0.15
4	1-3	c	f	1.80	0.15
5		c	f	1.00	0.15
6	1-4	c	f	1.20	0.10
7		c	f	2.20	0.20
8		c	f	1.50	0.15
9		c	f	2.50	0.20
10		c	f	6.00	0.20
11	1-5	c	m	1.50	0.15
12		c	f	1.00	0.15
13		c	f	1.50	0.15
14	2-1	c	f	1.80	0.10
15		c	f	2.00	0.10
16	2-2	c	f	2.50	0.10
17	2-3	c	f	8.00	0.10
18		c	f	1.00	0.10
19		c	c	5.50	2.20
20		c	b	6.00	0.20
21		c	f	4.80	0.10
22		c	f	12.00	0.10
23	2-4	c	f	1.50	0.10
24		c	f	4.00	0.10
25		c	f	2.20	0.10
26	2-5	c	f	3.80	0.10
27		c	f	2.50	0.10
28		c	b	6.50	0.20
29		c	c	3.00	2.50
30		c	b	3.80	0.40

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	3	Filter Type:	47MM
MAS Log Number:	M2140-3	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8145
Microscopist:	<i>W. Smith / J. O'Hanlon</i>	Tot Area Examined:	81450
Reviewed By:	<i>P. J. Smith</i>	Magnification:	15414X
Client Proj/ref:	888120.18	Dilution Factor:	1:100

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	60	12	9.871E+07	1.974E+07
No. of Chrysotile Bundles:	5	1	8.226E+06	1.645E+06
No. of Chrysotile Clusters:	5	2	8.226E+06	3.290E+06
No. of Chrysotile Matrices:	6	0	9.871E+06	0.000E+00
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)			:	1.497E+08
Total Asbestos Structures/1 sq ft (>= 5 um):			:	2.468E+07

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

Page: 1

Client LAW-Kennesaw

Sample ID: 3

MAS Log Number: M2140-3

Sample Received: 01-12-89

Sample Due Date:

Type Analysis: DUST

Microscopist: *W. Smith / A. Hannon*Reviewed By: *H. Hannon*

Client Proj/ref: A88120.18

Sample Area

1.000 sq ft

Filter Type:

47MM

Filter Area:

1.34E+009

Grid Openings:

10

Grids Examined:

2

Avg Area of Grid:

8145

Tot Area Examined:

81450

Magnification:

15414X

Dilution Factor:

1:100

Struc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	m	3.00	0.20
2		c	m	1.00	0.15
3		c	f	1.20	0.20
4		c	f	1.10	0.15
5		c	f	1.40	0.15
6		c	f	0.90	0.15
7		c	f	2.00	0.15
8		c	f	0.90	0.15
9		c	b	0.90	0.40
10		c	f	3.60	0.20
11	1-2	c	f	6.00	0.10
12		c	f	2.80	0.10
13		c	f	2.50	0.10
14		c	f	0.80	0.10
15		c	f	1.50	0.10
16		c	f	1.20	0.10
17		c	f	5.00	0.10
18	1-3	c	f	1.00	0.10
19		c	f	2.80	0.10
20		c	f	1.50	0.10
21		c	b	2.80	0.60
22		c	f	3.80	0.10
23		c	f	1.50	0.10
24		c	f	6.50	0.10
25	1-4	c	f	6.00	0.10
26		c	f	7.00	0.10
27		c	f	2.50	0.10
28		c	f	3.50	0.10
29		c	f	4.50	0.10
30		c	f	1.50	0.10
31		c	c	4.00	1.80
32		c	f	1.00	0.10
33		c	f	2.00	0.10
34		c	c	3.50	2.50
35		c	f	1.50	0.10

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Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	3	Filter Type:	47MM
MAS Log Number:	M2140-3	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8145
Microscopist:	<i>W. Smith / A. Hanner</i>	Tot Area Examined:	81450
Reviewed By:	<i>H. Hanner</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:100

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
36		c	f	4.20	0.10
37		c	b	6.50	0.20
38		c	f	1.20	0.10
39		c	f	2.50	0.10
40		c	f	2.00	0.10
41	1-5	c	c	5.50	4.00
42		c	f	3.60	0.10
43		c	f	8.50	0.10
44		c	f	4.20	0.10
45		c	f	2.00	0.10
46		c	f	4.00	0.10
47		c	f	3.20	0.10
48		c	f	8.00	0.10
49		c	f	2.20	0.10
50		c	f	2.50	0.10
51		c	f	2.20	0.10
52		c	f	12.00	0.10
53	2-1	c	f	1.50	0.10
54		c	f	4.80	0.10
55		c	f	5.00	0.10
56		c	f	1.50	0.10
57	2-2	c	f	2.20	0.10
58		c	f	1.20	0.10
59		c	f	1.50	0.10
60		c	f	3.00	0.10
61		c	f	3.00	0.10
62		c	c	3.50	1.80
63		c	b	1.50	0.20
64	2-3	c	f	2.20	0.10
65		c	b	4.50	0.20
66		c	m	3.20	2.80
67		c	m	2.50	2.00
68		c	f	1.50	0.10
69		c	c	5.00	3.80
70		c	f	3.20	0.10

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Client LAW-Kennesaw
 Sample ID: 3
 MAS Log Number: M2140-3
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *W. Smith / altman*
 Reviewed By: *H. J. Smith*
 Client Proj/ref: A88120.18

Sample Area 1.000 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8145
 Tot Area Examined: 81450
 Magnification: 15414X
 Dilution Factor: 1:100

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
71		c	b	1.80	0.20
72	2-4	c	f	6.50	0.10
73		c	f	1.20	0.10
74		c	f	6.80	0.10
75		c	f	1.50	0.10
76		c	f	2.20	0.10
77		c	f	3.20	0.10
78		c	f	2.80	0.10
79		c	f	2.20	0.10
80		c	m	3.80	3.00
81		c	f	4.50	0.10
82		c	c	2.00	1.00
83	2-5	c	f	3.50	0.10
84		c	f	1.00	0.10
85		c	f	1.20	0.10
86		c	m	4.50	2.50
87		c	f	2.00	0.10
88		c	f	5.00	0.10
89		c	f	3.50	0.10
90		c	c	4.00	1.50
91		c	f	1.50	0.10

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	4	Filter Type:	47MM
MAS Log Number:	M2140-4	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8011
Microscopist:	<u>AP Hanna</u>	Tot Area Examined:	80110
Reviewed By:	<u>AP Hanna</u>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:50

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	1	1	8.364E+05	8.364E+05
No. of Chrysotile Bundles:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	0	0	0.000E+00	0.000E+00
No. Free Amphibole Fibers:	1	0	8.364E+05	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		2.509E+06	
Total Asbestos Structures/1 sq ft (>= 5 um):			8.364E+05	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

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Client LAW-Kennesaw
 Sample ID: 4
 MAS Log Number: M2140-4
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: OP Harman
 Reviewed By: A. Harman
 Client Proj/ref: A88420.18

Sample Area 1.000 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8011
 Tot Area Examined: 80110
 Magnification: 15414X
 Dilution Factor: 1:50

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	2-4	a	f	1.80	0.10
2		c	f	6.80	0.10
3	2-5	c	f	4.20	0.10

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	5	Filter Type:	47MM
MAS Log Number:	M2140-5	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8145
Microscopist:	<i>[Signature]</i>	Tot Area Examined:	81450
Reviewed By:	<i>[Signature]</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:4

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	14	1	9.213E+05	6.581E+04
No. of Chrysotile Bundles:	1	1	6.581E+04	6.581E+04
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	0	0	0.000E+00	0.000E+00
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		1.119E+06	
Total Asbestos Structures/1 sq ft (>= 5 um):	:		1.316E+05	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

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Client LAW-Kennesaw
 Sample ID: 5
 MAS Log Number: M2140-5
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: John Haman
 Reviewed By: John Haman
 Client Proj/ref: A88120.18

Sample Area 1.000 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8145
 Tot Area Examined: 81450
 Magnification: 15414X
 Dilution Factor: 1:4

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	1.20	0.10
2		c	f	1.50	0.10
3		c	f	4.50	0.10
4		c	f	2.50	0.10
5	1-2	c	f	1.80	0.10
6	1-3	c	f	7.00	0.10
7		c	b	6.80	0.20
8	2-1	c	f	3.50	0.10
9		c	f	3.80	0.10
10	2-2	c	f	2.80	0.10
11		c	f	1.50	0.10
12	2-3	c	f	2.50	0.10
13		c	f	2.80	0.10
14	2-5	c	f	3.60	0.10
15		c	f	3.20	0.10
16		c	f	2.50	0.10
17		c	b	4.50	0.20

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	0.833 sq ft
Sample ID:	6	Filter Type:	47MM
MAS Log Number:	M2140-6	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8130
Microscopist:	<i>Jeffrey A. Hansen</i>	Tot Area Examined:	81300
Reviewed By:	<i>A. Jensen</i>	Magnification:	15414X
Client Proj/ref:	888120.18	Dilution Factor:	1:500

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	8	4	7.915E+07	3.957E+07
No. of Chrysotile Bundles:	1	0	9.893E+06	0.000E+00
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	8	1	7.915E+07	9.893E+06
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		2.177E+08	
Total Asbestos Structures/1 sq ft (>= 5 um):	:		4.947E+07	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

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Page: 1

Client LAW-Kennesaw

Sample ID: 6

MAS Log Number: M2140-6

Sample Received: 01-12-89

Sample Due Date:

Type Analysis: DUST

Microscopist: *W. Smith / J. Harmon*Reviewed By: *Th. Hester*

Client Proj/ref: A88120.18

Sample Area 0.833 sq ft

Filter Type: 47MM

Filter Area: 1.34E+009

Grid Openings: 10

Grids Examined: 2

Avg Area of Grid: 8130

Tot Area Examined: 81300

Magnification: 15414X

Dilution Factor: 1:500

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	2.00	0.30
2		c	f	2.40	0.20
3	1-2	c	m	1.80	0.20
4		c	m	3.00	0.15
5	1-3	c	m	1.10	0.15
6		c	m	2.50	0.15
7	1-4	c	f	8.00	0.20
8		c	f	17.00	0.20
9		c	m	1.00	0.15
10		c	f	1.80	0.20
11		c	m	3.00	0.30
12	1-5	c	f	4.00	0.20
13	2-2	c	f	3.00	0.10
14		c	b	3.20	0.20
15		c	m	5.00	4.50
16		c	f	2.00	0.10
17	2-3	c	f	11.00	0.10
18		c	f	6.00	0.10
19		c	f	4.20	0.10
20	2-4	c	m	4.00	3.50
21		c	f	2.80	0.10
22		c	m	4.20	3.80

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	0.667 sq ft
Sample ID:	7	Filter Type:	47MM
MAS Log Number:	M2140-7	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	1
Sample Due Date:		Grids Examined:	1
Type Analysis:	DUST	Avg Area of Grid:	7656
Microscopist:	<i>Ad Hanyan</i>	Tot Area Examined:	7656
Reviewed By:	<i>H. Hanyan</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:50

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	66	8	8.659E+08	1.050E+08
No. of Chrysotile Bundles:	1	3	1.312E+07	3.936E+07
No. of Chrysotile Clusters:	4	3	5.248E+07	3.936E+07
No. of Chrysotile Matrices:	3	3	3.936E+07	3.936E+07
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		1.194E+09	
Total Asbestos Structures/1 sq ft (>= 5 um):			2.230E+08	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

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Page: 1

Client LAW-Kennesaw
 Sample ID: 7
 MAS Log Number: M2140-7
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: Al Harrison
 Reviewed By: Sh. Hamlett
 Client Proj/ref: A88420.18

Sample Area 0.667 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 1
 Grids Examined: 1
 Avg Area of Grid: 7656
 Tot Area Examined: 7656
 Magnification: 15414X
 Dilution Factor: 1:50

Struc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	3.50	0.10
2		c	f	3.00	0.10
3		c	f	1.50	0.10
4		c	c	2.50	1.50
5		c	m	4.80	1.00
6		c	m	5.00	3.50
7		c	c	3.50	2.80
8		c	m	5.50	4.80
9		c	f	4.00	0.10
10		c	b	55.00	0.20
11		c	f	3.50	0.10
12		c	f	4.50	0.10
13		c	f	2.20	0.10
14		c	f	15.00	0.10
15		c	f	4.50	0.10
16		c	f	3.50	0.10
17		c	f	3.80	0.10
18		c	f	1.50	0.10
19		c	f	5.50	0.10
20		c	f	2.80	0.10
21		c	f	1.80	0.10
22		c	f	4.00	0.10
23		c	f	1.20	0.10
24		c	f	3.50	0.10
25		c	f	3.20	0.10
26		c	f	2.20	0.10
27		c	f	3.60	0.10
28		c	f	1.00	0.10
29		c	f	1.50	0.10
30		c	f	2.50	0.10
31		c	f	1.00	0.10
32		c	f	2.80	0.10
33		c	f	4.00	0.10
34		c	f	1.50	0.10
35		c	f	2.00	0.10

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Client LAW-Kennesaw
 Sample ID: 7
 MAS Log Number: M2140-7
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *Al Hurner*
 Reviewed By: *Al Hurner*
 Client Proj/ref: A88120.18

Sample Area 0.667 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 1
 Grids Examined: 1
 Avg Area of Grid: 7656
 Tot Area Examined: 7656
 Magnification: 15414X
 Dilution Factor: 1:50

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
36		c	f	2.20	0.10
37		c	f	2.20	0.10
38		c	f	2.80	0.10
39		c	b	7.50	0.20
40		c	f	2.20	0.10
41		c	f	4.50	0.10
42		c	f	5.50	0.10
43		c	f	2.80	0.10
44		c	f	1.00	0.10
45		c	f	3.50	0.10
46		c	f	2.80	0.10
47		c	c	3.50	2.40
48		c	c	4.50	3.80
49		c	f	12.00	0.10
50		c	f	2.20	0.10
51		c	f	2.80	0.10
52		c	m	4.00	3.50
53		c	f	4.50	0.10
54		c	f	2.00	0.10
55		c	f	1.20	0.10
56		c	f	2.80	0.10
57		c	f	2.00	0.10
58		c	f	2.50	0.10
59		c	f	8.50	0.10
60		c	f	6.00	0.10
61		c	c	11.00	4.00
62		c	f	4.00	0.10
63		c	f	1.80	0.10
64		c	c	8.50	3.60
65		c	f	1.20	0.10
66		c	f	2.00	0.10
67		c	f	6.50	0.10
68		c	f	1.20	0.10
69		c	f	2.00	0.10
70		c	f	3.00	0.10

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Client	LAW-Kennesaw	Sample Area	0.667 sq ft
Sample ID:	7	Filter Type:	47MM
MAS Log Number:	M2140-7	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	1
Sample Due Date:		Grids Examined:	1
Type Analysis:	DUST	Avg Area of Grid:	7656
Microscopist:	<i>[Signature]</i>	Tot Area Examined:	7656
Reviewed By:	<i>[Signature]</i>	Magnification:	15414X
Client Proj/ref:	A88420.18	Dilution Factor:	1:50

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
71		c	f	3.20	0.10
72		c	c	11.00	3.80
73		c	f	0.80	0.10
74		c	m	7.00	2.20
75		c	f	4.00	0.10
76		c	f	1.40	0.10
77		c	f	2.80	0.10
78		c	f	1.50	0.10
79		c	f	1.20	0.10
80		c	b	8.50	0.30
81		c	m	2.50	0.80
82		c	f	1.50	0.10
83		c	f	18.00	0.10
84		c	f	4.80	0.10
85		c	f	1.50	0.10
86		c	f	4.60	0.10
87		c	f	1.20	0.10
88		c	b	1.50	0.20
89		c	f	1.80	0.10
90		c	f	4.00	0.10
91		c	f	2.20	0.10

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	0.666 sq ft
Sample ID:	8	Filter Type:	47MM
MAS Log Number:	M2140-8	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	2
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	9183
Microscopist:	<i>W. P. Smith</i>	Tot Area Examined:	18366
Reviewed By:	<i>Al Harmon</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:1000

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	69	16	7.559E+09	1.753E+09
No. of Chrysotile Bundles:	3	0	3.287E+08	0.000E+00
No. of Chrysotile Clusters:	4	0	4.382E+08	0.000E+00
No. of Chrysotile Matrices:	11	4	1.205E+09	4.382E+08
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		1.172E+10	
Total Asbestos Structures/1 sq ft (>= 5 um):			2.191E+09	

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

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Client LAW-Kennesaw
 Sample ID: 8
 MAS Log Number: M2140-8
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *W. P. Smith*
 Reviewed By: *Older*
 Client Proj/ref: A88120.18

Sample Area 0.666 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 2
 Grids Examined: 2
 Avg Area of Grid: 9183
 Tot Area Examined: 18366
 Magnification: 15414X
 Dilution Factor: 1:1000

Struc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	1.80	0.20
2		c	f	1.00	0.15
3		c	f	3.00	0.15
4		c	f	1.00	0.15
5		c	f	0.70	0.10
6		c	f	2.50	0.20
7		c	f	2.70	0.20
8		c	f	2.00	0.20
9		c	f	0.90	0.15
10		c	f	2.50	0.20
11		c	m	7.00	0.30
12		c	m	8.00	0.30
13		c	f	2.00	0.20
14		c	f	3.50	0.20
15		c	f	2.00	0.15
16		c	f	1.90	0.15
17		c	f	4.00	0.20
18		c	f	3.50	0.20
19		c	f	2.00	0.20
20		c	f	8.00	0.20
21		c	c	2.00	0.70
22		c	f	7.00	0.20
23		c	m	3.50	1.00
24		c	f	2.00	0.15
25		c	f	1.50	0.20
26		c	f	10.00	0.20
27		c	f	1.00	0.15
28		c	f	7.00	0.20
29		c	f	2.50	0.20
30		c	f	2.20	0.20
31		c	f	3.50	0.15
32		c	f	3.50	0.20
33		c	f	2.20	0.20
34		c	f	6.00	0.15
35		c	f	5.00	0.20

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Client LAW-Kennesaw
 Sample ID: 8
 MAS Log Number: M2140-8
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *W.P. Smith*
 Reviewed By: *A. Harn*
 Client Proj/ref: A88120.18

Sample Area 0.666 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 2
 Grids Examined: 2
 Avg Area of Grid: 9183
 Tot Area Examined: 18366
 Magnification: 15414X
 Dilution Factor: 1:1000

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
36		c	c	2.00	1.00
37		c	f	2.00	0.15
38		c	f	10.00	0.20
39		c	f	3.50	0.20
40		c	f	3.00	0.15
41		c	f	3.60	0.30
42	2-1	c	f	4.00	0.20
43		c	f	10.00	0.50
44		c	f	3.50	0.10
45		c	f	1.90	0.15
46		c	f	1.10	0.20
47		c	f	1.10	0.15
48		c	f	2.20	0.20
49		c	f	4.00	0.20
50		c	c	4.00	0.50
51		c	c	3.00	0.60
52		c	f	2.00	0.20
53		c	f	3.00	0.30
54		c	m	2.00	0.90
55		c	f	2.00	0.30
56		c	f	2.00	0.15
57		c	m	5.00	0.20
58		c	f	9.00	0.30
59		c	m	2.50	0.15
60		c	f	1.00	0.15
61		c	f	1.70	0.20
62		c	m	0.90	0.10
63		c	f	0.90	0.10
64		c	f	1.80	0.15
65		c	f	0.90	0.10
66		c	m	1.00	0.15
67		c	b	3.00	0.30
68		c	m	4.00	0.80
69		c	f	1.00	0.15
70		c	f	30.00	0.30

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Client	LAW-Kennesaw	Sample Area	0.666 sq ft
Sample ID:	8	Filter Type:	47MM
MAS Log Number:	M2140-8	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	2
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	9183
Microscopist:	<i>W. P. Smith</i>	Tot Area Examined:	18366
Reviewed By:	<i>A. L. Harmon</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:1000

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
71		c	f	24.00	0.30
72		c	f	2.00	0.15
73		c	f	3.00	0.20
74		c	f	0.90	0.15
75		c	f	3.00	0.15
76		c	f	1.80	0.20
77		c	f	18.00	0.20
78		c	f	8.00	0.20
79		c	f	1.70	0.20
80		c	f	5.00	0.20
81		c	m	2.00	0.20
82		c	m	1.00	0.15
83		c	f	1.90	0.10
84		c	f	1.00	0.10
85		c	f	2.50	0.20
86		c	f	3.00	0.20
87		c	f	3.00	0.30
88		c	f	2.00	0.20
89		c	f	2.30	0.15
90		c	f	6.00	0.30
91		c	f	2.20	0.10
92		c	f	0.90	0.10
93		c	m	2.00	1.50
94		c	f	3.20	0.20
95		c	f	3.50	0.20
96		c	f	1.90	0.10
97		c	f	1.90	0.20
98		c	f	15.00	0.20
99		c	f	1.00	0.10
100		c	m	2.50	0.10
101		c	b	1.00	0.20
102		c	f	3.50	0.15
103		c	f	0.80	0.10
104		c	f	1.00	0.20
105		c	m	1.40	0.20

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Client	LAW-Kennesaw	Sample Area	0.666 sq ft
Sample ID:	8	Filter Type:	47MM
MAS Log Number:	M2140-8	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	2
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	9183
Microscopist:	<i>W. Schmidt</i>	Tot Area Examined:	18366
Reviewed By:	<i>Ed. Hansen</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:1000

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
-----	-----	-----	-----	-----	-----
106		c	m	7.00	2.00
107		c	b	1.80	0.30

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	9	Filter Type:	47MM
MAS Log Number:	M2140-9	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	7977
Microscopist:	<i>W.P. Smith / J. Hannon</i>	Tot Area Examined:	79770
Reviewed By:	<i>W. Smith</i>	Magnification:	15414X
Client Proj/ref:	AB8120.18	Dilution Factor:	1:143

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	32	7	7.687E+07	1.682E+07
No. of Chrysotile Bundles:	2	0	4.804E+06	0.000E+00
No. of Chrysotile Clusters:	0	1	0.000E+00	2.402E+06
No. of Chrysotile Matrices:	5	1	1.201E+07	2.402E+06
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)			:	1.153E+08
Total Asbestos Structures/1 sq ft (>= 5 um):			:	2.162E+07

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

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Client LAW-Kennesaw
 Sample ID: 9
 MAS Log Number: M2140-9
 Sample Received: 01-12-89
 Sample Due Date:
 Type Analysis: DUST
 Microscopist: *W. R. Smith / O. J. Harrison*
 Reviewed By: *H. J. Harrison*
 Client Proj/ref: A88120.18

Sample Area 1.000 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 7977
 Tot Area Examined: 79770
 Magnification: 15414X
 Dilution Factor: 1:143

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
1	1-1	c	f	0.60	0.10
2		c	f	0.70	0.10
3	1-2	c	m	1.00	0.10
4		c	m	0.80	0.10
5		c	f	1.50	0.20
6		c	f	2.00	0.10
7	1-3	c	f	2.50	0.30
8		c	f	1.40	0.10
9		c	f	1.70	0.15
10		c	f	1.20	0.15
11		c	m	1.60	0.15
12		c	f	1.60	0.15
13		c	f	0.90	0.10
14		c	f	1.60	0.15
15		c	f	1.20	0.10
16		c	f	6.00	0.20
17		c	f	3.50	0.20
18	1-4	c	f	1.50	0.10
19		c	m	1.00	0.10
20	1-5	c	f	2.00	0.10
21		c	m	1.20	0.10
22	2-1	c	b	2.00	0.30
23		c	b	3.50	0.20
24		c	f	3.40	0.10
25		c	f	0.50	0.10
26		c	f	1.40	0.10
27	2-2	c	m	25.00	11.00
28		c	f	4.50	0.10
29		c	f	5.00	0.10
30		c	f	4.00	0.10
31		c	f	0.70	0.10
32		c	f	11.00	0.10
33	2-3	c	f	3.50	0.10
34		c	f	3.80	0.10
35	2-4	c	f	8.00	0.10

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Client	LAW-Kennesaw	Sample Area	1.000 sq ft
Sample ID:	9	Filter Type:	47MM
MAS Log Number:	M2140-9	Filter Area:	1.34E+009
Sample Received:	01-12-89	Grid Openings:	10
Sample Due Date:		Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	7977
Microscopist:	<i>J. Schmidt / A. H. H. H.</i>	Tot Area Examined:	79770
Reviewed By:	<i>H. H. H. H.</i>	Magnification:	15414X
Client Proj/ref:	A88120.18	Dilution Factor:	1:143

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
36		c	f	2.50	0.10
37		c	f	4.50	0.10
38		c	f	3.20	0.10
39		c	f	5.50	0.10
40		c	c	8.00	3.50
41		c	f	3.50	0.10
42		c	f	4.00	0.10
43		c	f	5.50	0.10
44	2-5	c	f	5.80	0.10
45		c	f	4.00	0.10
46		c	f	3.20	0.10
47		c	f	4.00	0.10
48		c	f	1.50	0.10